

First Aeronautical Weekly in the World. Founded January, 1909

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice and Progress of Aerial Locomotion and Transport OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM

No. 1229. (Vol. XXIV. No. 29.)

JULY 15, 1932

Weekly, Price 6d. Post Free, 7½d. Abroad, 8d.

Editorial Offices: 36, GREAT QUEEN STREET, KINGSWAY, W.C.2. Telephone: (2 lines), Holborn 3211 and 1884. Telegrams: Truditur, Westcent, London.

Subscription Rates, Post Free. OTHER COUNTRIES UNITED KINGDOM UNITED STATES d s. d. 8 3 3 3 ... 16 6 6 ... 33 0 12 s. 8 3 Months ... 6 12 3 Months ... \$2.20 6 ,, ... \$4.40 12 ,, ... \$8.75 3 Months ... 6 ,, ... 12 ,, ... ,, ... 17 6 ,, ... 35 0

CONTENTS

Editorial Comment	2							PAGE
A Triumph for	Engines	10.0	5363	0.636	137.152		0.000	641
Short 6-Engined Fly	ing Boat	1000	1000	11424	263			643
King's Cup Air Race							4.4	644
Air Transport	** **	5904	((*))*	1969	3959	5500		659
The A.W.XV Monog	olane			(4141)		100	6.70	661
The Short 6-Engined	Flying Bo	at " Pr	resente	d "	105.50	1000	1,5750	666
Do. X.: By E. C. G	ordon Engl	land	**		4.9	1.0		667
An International Fly	ving School			* *	00000	100	100	669
Private Flying and	Gliding		(4.4)		1000	0.00	122	670
Airport News	\$1\$15 \$1\$1	1000	2020	900	¥343	9345	***	671
Airisms from the Fo	ur Winds		10000	1,7050	0.5050	1.5	5.50	672
The Industry	**							673
Royal Air Force								675

DIARY OF CURRENT AND FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in this list:— Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in this list:

July 16-17. International Meeting, Dieppe.
July 17-30. National Aviation Day Displays (see page 672).
July 21. General Meeting of R.N.F.C. in the R.U.S.I., 5.30 p.m.
July 22-31. International Meeting, Zurich.
July 23. Northants Ae.C. Meeting at Kineton.
July 23-24. York County Aviation Club "At Home," Sherburnin-Elmet.
July 30-31. Skegness Air Pageant.
July 31. Comrades of the R.A.F. (Hounslow, Heston and Dis. Branch), Garden Party, Hanworth.
Aug. 1. Cowes Air Pageant.
Aug. 6. Newcastle Air Meeting, Cramlington.
Aug. 6. London-Newcastle Air Race.
Aug. 6. Cramlington Air Race.
Aug. 6. Cramlington Air Race.
Aug. 11-28. International Touring Competition, Berlin.
Aug. 15-16. Cricket: R.N. v. R.A.F. at Lords.
Aug. 19-21. 4th Annual Canadian Air Pageant, St. Hubert, Quebec Aug. 20. Ryde Air Pageant.
Sept. 3. Leicester Chamber of Commerce Day, at Desford.
Sept. 4. Divine Service at Ratcliffe Aerodrome, 2.30 p.m.
Sept. 5. F.A.I. Conference at The Hague.
Sept. 8. International Meeting, Vicenza, Italy.
Sept. 24. Air Display at Hillmans' Aerodrome, Gallows Corner, Brentwood.
Sept. 25. Gordon Bennett Balloon Race, Basle.
Oct. 1. Bristol and Wessex Ae.C. Garden Party.
Oct 18. Aero Golfing Society: Cellon Challenge Cup, West Hill G.C.
Nov. 18-Dec. 4. Paris Aero Show.

EDITORIAL COMMENT



ESIGNERS of aero engines may claim the eleventh race for the King's Cup as a special triumph for themselves. The reliability of the engines was certainly the outstanding feature of the event. Of the 42 aeroplanes which started on Friday morning, 34 flew back to Brooklands on Saturday after-

On Saturday not a single starter failed to return. Of the eight which fell out before the start on Saturday, one was disqualified for missing a turn-

Triumph for Engines

ing point, and three retired because they felt they had no chance of doing good time. That leaves only four cases of mechanical trouble in 42 engines in two days of racing over a distance totalling 1,223

miles. It is very doubtful whether 42 motor cars would be able to show such a high percentage of reliability after a race of that length. In fact, the reliability of the aero engine is now a proved fact

at which one can only marvel.

On the human side of the race, we offer hearty congratulations to Mr. W. L. Hope on winning his third King's Cup. He is undoubtedly a racing pilot of the finest water, and can be counted upon to get the best out of his engine and his aeroplane, and also to steer a winning course. That he should have gained so much on his handicap surprised even his admirers, but it must be remembered that the fine windless weather favoured the chances of the limit machines. Whatever the cause, Hope flew right away from his field from the very start, and throughout the race continued to improve on his handicap time. It was the first public appearance of the Gipsy

3A engine, and its triumph was complete.

Scarcely less credit is due to the Prince of Wales' entry, the Comper "Swift," with Gipsy 3 engine, flown with consummate skill by Flt. Lt. E. H. Fielden. The combination of "Swift" and inverted Gipsy has produced a very fine single-seater racer. Had the Prince of Wales won his Father's Cup, the event would have been tremendously popular, and would probably have aroused some new and muchneeded popular interest in air racing. But in British sport there is no fear and no favour. The best man must win, and if a prince's entry wins any public contest, the Derby or anything else, it means that

that condition has been fulfilled.

The Siddeley Challenge Trophy went to the third man in, Mr. W. L. Runciman, of the Newcastle Aero Club, flying his own "Puss Moth." Runciman flew a consistently good race and deserves all congratulations. It augurs well for the future when the sons of our rulers take to the air and prove that they have mastered the art of flying. Another thing which looks well for the future is the speed round the course made by the Avro mailplane. If only all our letters could travel about the Empire at an average speed of 176 m.p.h., there would be few critics of flying left. Yet the Avro mailplane is

only the first of her class.

The eleventh King's Cup race will go down to history as one of the fine weather events. Far be it from us to complain when this stormy island in the Atlantic is visited by a transient gleam of sunshine. It will pass all too soon, and then we shall be left lamenting. At the same time, it was difficult last Friday and Saturday not to reflect that on a gloriously fine day an aerodrome is not really the most desirable place. There is an absence of shade, and at Brooklands, in particular, the motor track does not help the free circulation of any breeze which may be wandering about. Consequently, we could not feel very indignant with all the millions of Londoners who decided not to come to see the King's Cup Race. If they found cooler attractions on the open road, or on the river, or at the Lansbury Lido, who could blame them?

There is, however, nothing new in the refusal of Londoners to come to watch aeroplanes racing on handicap. To us who live in the atmosphere of aircraft and flying, the Hendon Display and the King's Cup are the two great events of the summer. the London public there is between those two a great gulf fixed. They go to one in vast numbers and revel in it; they resolutely stay away from the other. This fixed determination has been manifested in all the eleven years since the first King's Cup Race, whatever the weather may have been, and it seems quite time that the Royal Aero Club should recognise the fact that handcap air racing does not appeal to Londoners, and that it is waste of time to consider the London public when making arrangements for the It has usually been different with the great towns of the North and the Midlands. Once the Royal Aero Club made Nottingham the start and finish of the race, and the crowd there was larger than is usually seen at a London aerodrome, though it was not so large as had been hoped. Still, in a number of years very large crowds collected at the Northern and Midland towns which were made controls; and it has seemed to us that the Royal Aero Club might have easily exploited that fact.

If, however, it is now believed that the one-time enthusiasm of the great provincial cities has evaporated-and, of course, the various clubs have seen to it that air displays are now no novelty outside London—the best policy would surely be to neglect the public altogether. The main, if not the only, reason for holding a handicap race is to produce a close finish in the hope of stirring up popular interest. That hope has been proved vain, at least so far as London is concerned; so the question arises: Why make the King's Cup a handicap race? A handicap serves no useful purpose in the way of improving the breed of aeroplanes. A formula race would not appeal to the public, but neither has the handicap made any appeal. The formula race might at least do something to improve the breed of aeroplanes. It would mean that the King's Cup was a race for designers, and as such it might prove a very useful

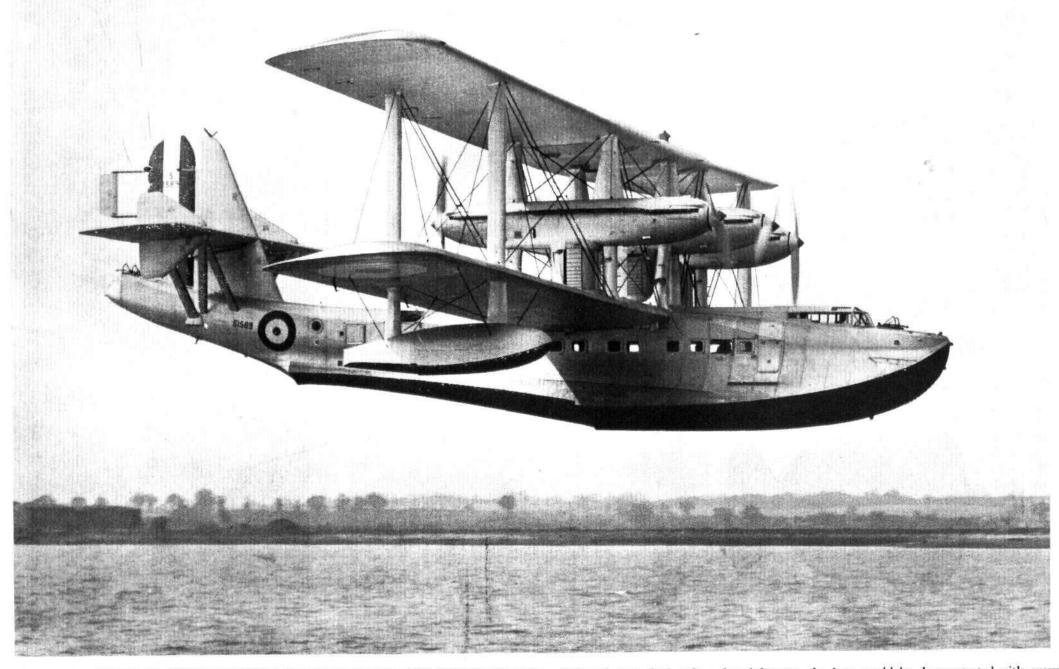
It is a pity that there are so few seaplanes in the country, for a seaplane race would strike a new note, and might well arouse a real public interest. The public will go to the seaside when they will not go to a torrid aerodrome. In Great Britain we ought to have more seaplanes. We have plenty of yachting enthusiasts, and one would have thought that seaplanes would appeal to them. As a maritime nation we ought to be most anxious to develop the use of seaplanes, and it is deplorable that so little has been done that way. Perhaps, however, the seaplane movement will come in time, and if it does, a maritime King's Cup should be a draw. One year seaplanes did compete, and the finish at Lee-on-Solent was a very pleasant experience.

In this year's race there was one very regrettable feature, and that was the number of private aeroplanes which chose to land at Brooklands while the racing was going on. Every possible step had been taken to inform all private owners and other private pilots of what they ought to do, and ought not to do, during the race, and it is difficult to believe that any of them were really left in ignorance. Even if they were ignorant, there is such a thing as common sense, and in Great Britain there is nearly always such a thing as a sporting feeling. Certainly some of the racers were baulked by private machines landing at Brooklands during the race, and the conduct of those pilots who were responsible for baulking them, however unintentionally, was hardly sporting.

When all is said and done, the King's Cup of 1932 was a fine race, and the organisation at the controls and at Brooklands was very good. In the main, the piloting was also very good. Very few pilots strayed far off the course, and large numbers kept arriving at Brooklands and Bristol close together. This shows also that, in the main, the handicapping was quite good. On Friday afternoon 35 machines arrived at Brooklands in 35 minutes. One could hardly expect anything much better than that.

We must end where we began. This race was a triumph for the aero engines, once thought the most fallible part of an aeroplane, but now one of the most reliable features.





THE NEW 6-ENGINED SHORT FLYING BOAT (ROLLS-ROYCE "BUZZARDS"): Although launched only a fortnight ago, the boat could be demonstrated with every confidence on Monday last. It was flown by Mr. Lankester Parker. Like other Short flying boats, the new machine was "right" from the very start, and needed practically no modifications at all. (FLIGHT Photo.) (See also p. 666.)



KING'S CUP RACE, 1932

OR the third time the air race for the Cup presented by His Majesty the King has been won by Mr. W. L. Hope, who was the winner of the races of 1927 and 1928. Hope's win this year cannot be said to have come as a complete surprise. In last week's issue of Flight we pointed out that, with the handicap allowance given the "Fox Moth," that machine should stand a very good chance, and events proved that it did, to the tune of an average speed of 124.25 m.p.h., as against

the 110 m.p.h. or so upon which the handicap allowance was based.

the handicap allowance was based. It is not often that the official handicappers, Rowarth and Dancy, "slip up," but in this case they certainly did. Where, exactly, Hope got his amazing speed is not at all clear. The main respects in which the machine differed from the standard "Fox Moth" were: The fitting of the "Gipsy IIIA" engine instead of the standard "Gipsy III," the removal of the petrol tank from the top centre-section, the flattening out of the "bay windows" fitted on the standard machine to give the passengers more elbow room, and the fitting of a transparent "lid" over the pilot's cockpit. The fact that the machine averaged more than 124 m.p.h. over the whole course must mean that the actual air speed was somewhere about 130 m.p.h. 130 m.p.h.

Near the other end of the scale the two Comper "Swifts" fitted with "Gipsy III" engines also proved much faster than expected by the handicappers, the Prince of Wales' entry averaging 155.75 m.p.h. over the whole course, whereas its handicap allowance was based on something like 141 m.p.h. In other words, like Hope's "Fox Moth," Fielden's "Gipsy Swift" was some 14 m.p.h. faster than expected. The result was that at one time it looked as if the Prince of Wales' entry might score a win, but ultimately it secured second place.

but ultimately it secured second place.

Mr. W. L. Runciman flew a very excellent race indeed. and had the handicapping been closer to the actual facts, Mr. Runciman's "Puss Moth" ("Gipsy III") would have been the winner. However, there is little use in speculating on what might have been, and in actual fact

Mr. Runciman secured third place

in the King's Cup race and first place in the Siddeley Trophy race, which was flown concurrently with the King's Cup race. His average speed was 130.00 m.p.h.

RESULT First: W. L. Hope on De Havilland "Fox Moth" (D.H. "Gipsy IIIA" Engine). Average Speed 124-25 m.p.h. Second: E. H. Fielden, on Comper "Swift" (D.H. "Gipsy III"). Average Speed 155-75 m.p.h. Third: W. L. Runciman, on De Havilland "Puss Moth" (D.H. "Gipsy III"). Average Speed 130.00 m.p.h. Fastest Time: H. A. Brown, on Avro "Mailplane" (Armstrong Siddeley "Panther II A" Engine). Average Speed 176.00 m.p.h.

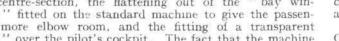
The Start at Brooklands English weather is an unfailing source of conversation-generally vituperative—but on few occasions

o m.p.h.

can its vagaries have been more carefully studied than on the morning the King's Cup race was to start. Friday dawned clear and hot, and by 6.30 a.m. those on the aerodrome at Brooklands had already shed their coats.

Shortly after this time Mr. Entwistle, of the "Met."

Office, was besieged in his hut near the club-house with requests for the latest weather reports. The careful pilot finds out exactly the strength, height and direction of the wind before he starts out on a race like this, and several





RESULT

THE HEADQUARTERS AT BROOKLANDS: The Clubhouse, with Control Tower, microphone, loud-speakers and all essential equipment. The enclosure is not exactly crowded. (FLIGHT Photo.)

LIGHT, July 15, 1

THE KING'S CUP RACE

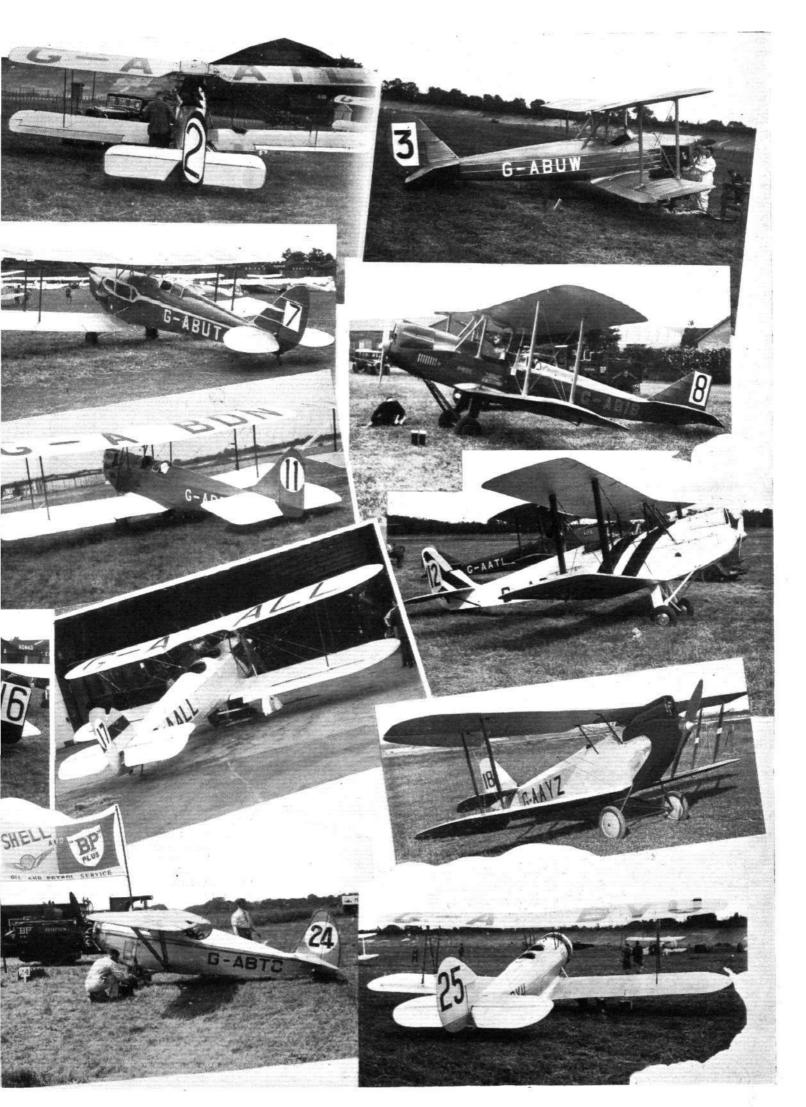
TIMES AND SPEEDS OF THE COMPETITORS

No.						Section I, July 8							Section II, July 9								
tration Entrant Mark.		Pilot	Aircraft.	Engine	Handi-	Starting Bristol,		Leicester,	Brooklands,	Average	Place	Brooklands		ands	ds		Average Speed for	Place			
œ.				<u> </u>		сар	Time	Arr. Arr.		Arr.	Arr. Speed		D	epart	1st Lap		Finish		Race	1 11200	
1 2 5	ABPU AATL ABTR	J. F. Legard G. H. Keat LtCol. L. A. Strange	J. F. Legard G. H. Keat S. A. Thorn	Avro Avian IIIA Avro Avian 4M Spartan 3-str., Mk. II	Genet II Hermes II Hermes IIB	h, m. s. 2 36 36 2 36 36 2 36 36 2 36 36	h. m. s. 8 00 00 8 00 00 8 01 00	h. m 10 30 10 16 10 09	00	h, m. s. 13 43 00 13 17 00 13 01 00	Retired Let	c ester 103-25	34 26	12	m. s. 39 55 14 15	h. m 15 07 14 31	7 05	18 2	m. s. 	m.p.h. 103.00 110.0	31 26
6 7 3 8 10 12 14	AAYL ABUT ABUW ABIB AAJP ABJL AACC	Miss W. E. Spooner A. E. Hagg R. Blackburn J. G. Ormston J. Grierson Hon. R. Westenra G. Kenning	Miss W. E. Spooner W. L. Hope F/O. J. W. Gillan J. G. Ormston J. Grierson Hon. R. Westenra R. T. M. Clayton	D.H. Moth D.H. Fox Moth Blackburn B.2 Avro Sports Avian D.H. Moth D.H. Moth Blackburn Blue- bird IV	Gipsy I Gipsy IIIA Gipsy III Hermes II Gipsy I Gipsy I Hermes II	2 36 36 2 36 36 2 32 58 2 32 58 2 29 25 2 22 28 2 22 38	8 01 00* 8 01 30** 8 03 38 8 03 38 8 07 11 8 14 08* 8 14 38**	10 05 9 54 10 07 10 16 10 11 10 13	00 00 00 00	12 52 00 12 30 49 12 52 00 13 06 00 13 09 00 Landed at	15 19 41 15 49 43 16 07 27 15 59 30	123.75 114.75 109.75 113.00 114.00		11 12 12 12	00 59 30 00 03 59 21 43 16 08 23 52	14 13 13 32 14 20 14 38 14 36 14 36	2 47 3 52 3 55 2 29	16 2 17 2 Failed 17 4	22 00 27 47 27 57 d to ero 40 24 39 35		15 1 18 24 23
9 15	ABWI AAHP	R. McAlpine SqdLdr. J. McKelvie		Blackburn B.2 D.H. Moth	Gipsy III Gipsy I	2 22 28 2 20 46	8 14 38** 8 15 50	10 20 10 14		13 03 00 12 55 00			22 11	12 12	19 15 09 14	14 30 14 16		17 3 17 1	38 13 15 56	115·0 119·75	22 7
11	ABDN	Lt. C. R. V. Pugh, R.N.	Lt. C. R. V. Pugh, R.N.	Avro Sports Avian	Hermes II		8 20 50	10 18	1	13 00 00			33		41 05	14 48	•		19 14	115.0	27
16 17 18 21 23 24 25	ABED AALL AAYZ ABJR ABUU ABTC ABVU	Miss W. Brown Air Com. P. E. Guest F/O. E. C. T. Edwards H. C. Mayers M. A. Lacayo Capt. I. C. Maxwell A/M. Sir J. F. A. Higgins	Miss W. Brown Air Com. F. E. Guest	Avro Sports Avian Hawker Tomtit Martlet Comper Swift Comper Swift Comper Swift Comper Swift Avro Cadet	Hermes II Mongoose HIC Gipsy I Pobjoy " R " Pobjoy " R " Pobjoy " R " Genet Major	1 59 59	8 27 18 8 32 00	Return	ed Br 00 00 00 00 00	ooklands (Ci	ton Weaver 16 02 40 16 50 51 15 50 57	 Warringto 121-00 Disqualit 125-25	1 25 1	12 ton 12	23 09 — 39 01 26 48 26 33	14 32 14 44 14 29 14 25	20	Failed	15 21 	117·5 — es line ————————————————————————————————————	21 — — — — — — 16 17
26 27 28 30 31 32 33 36	ABII ABLG AAVA ABLS ABGT ABGX AAZD AAYB	H, Wilcox W. L. Runciman K. C. Gandar Dower E. L. Gandar Dower Capt. G. de Havilland Mrs. A. S. Butler P. de W. Avery Lt. Com. G. Rodd, R.N.	SqdLdr. W. Helmore W. L. Runciman A. C. S. Irwin C. L. Pashley G. R. de Havilland Flt. Lt. H. M. Mellor	Hawker Tomtit D.H. Puss Moth	Mongoose IIIC Gipsy III Gipsy III Gipsy III Gipsy III Gipsy III Pobjoy "R" Gipsy III	1 58 29 1 58 29 1 58 29 1 58 29 1 58 29 1 58 29	9 18 37 9 19 37*	10 34 10 25 10 27 11 05 11 08 11 06 11 10	00 00 00 00 00 00	13 15 00 12 57 00 12 59 00 14 31 00 13 42 00 14 12 00 13 44 00 13 42 00	15 37 31 15 41 08 17 19 27 16 26 17 17 17 12 16 27 30	IEI+00	30 3 4 36 8 35 12 7	12 13 12 Retir 12	14 53 18 30 16 49 23 09	14 12 14 17 14 23 14 27 14 22	12 19 46	17 0	1 20	130 · 00 129 · 0 127 · 25 126 · 75 128 · 25	3 4 30 8
37 38	AAYW ABDF	Lt. C. John, R.N. E. W. Hart	Lt. C. John, R.N Fit. Lt. A. P. K. Hatterslev	Avian Monoplane D,H, Puss Moth	Hermes II Gipsy III	1 54 02 1 54 02	9 22 34 9 22 34	11 14 11 []	00 00	13 50 00 13 43 00		126·25 129·5	18 6		33 26 24 44	14 30 14 23		17 2 17 1	1 33 7 07	128·00 128·75	14 9
39	ABVW	Lord Wakefield of Hythe	Capt. H. S. Broad	D.H. Moth	Gipsy IIIA	1 51 07	9 25 29	11 11	00	13 42 00	16 21 44	131-75	5	12	24 01	14 21	23	17 1	1 03	131 - 25	5
40 41 42 44 46 48 49 50	AAZC AAXM AAZF ABME ABIX ABVE AAXP ABUR	F. R. Walker W. L. Everard Capt. G. Fane A. J. A. Wallace Barr A. C. Thornton G. E. de Lengerke Lt. Com, E. W. B. Leake	F. R. Walker Flt. Lt. W. E. P. Johnson Wing Com. J. M. Robb Flt. Lt. E. A. Healy F/O. E. C. T. Edwards F/O. H. H. Leech Flt. Lt. J. G. D. Armour E. W. Percival	Comper Swift D.H. Puss Moth Comper Swift Avro Avian IVM Arrow Active Arrow Active II Meteor Percival "Gull"	Pobjoy "R" Gipsy III Pobjoy "R" Genet Major Hermes IIB Gipsy III 2 Gipsy III Hermes IV	1 48 17 1 48 17 1 42 42 1 38 37 1 34 39 1 22 02 1 19 37 1 19 37	9 28 19 9 28 19 9 33 54 9 37 59 9 41 57 9 54 34 9 56 59 9 56 59	11 21 11 21 16 25 11 24 11 24 11 35 11 41 11 37	00 00 00 00 00	13 59 00 13 59 00 Retired Ca 13 55 00 13 51 00 14 01 00 14 18 00 13 58 00	16 47 33 stle Bromwick 16 34 41 16 26 45 16 34 19 16 54 58	(Engine to 131.5 136.25 138.5	30 29 rouble) 20 10 19 32 13	12 12 12 12 13	50 42 51 45 45 21 40 05 56 07 18 23 51 15	14 54 14 51 14 43 14 32 14 48 15 14 14 38	10 45 39 23 05	17 3 17 1 17 3 Retire	3 45 4 43 8 28 12 50 ed Broo		28 25 20 10 19 12
51 52	ABWH ABWW	I. C. MacGilchrist H.R.H. Prince of Wales	A. J. Styran Flt. Lt. E. H. Fielden	Comper Swift Comper Swift	Gipsy III Gipsy III	1 10 19 1 10 19		11 37 11 35		13 54 00 13 48 00		147·5 157·00	9		56 14 38 01	14 37 14 15			8 40 50 58	147·25 155·75	11 2
53	ABJM	Sir J. D. Siddeley	H. A. Brown	Avro " Mailplane "	Panther IIA	Scratch	11 16 36	12 35	90	14 39 00	16 48 42	175.5	31	14	05 28	15 32	43	17 5	53 57	126.0	29

Note.—In the interests of safety a gap of 40 minutes was introduced in Section I between the starting times of Competitors Nos. 28 and 30. All Competitors from No. 30 onwards, therefore, started 40 minutes later than their true handicap allowances. This 40 minutes has been deducted for Competitors' Place in Section I.

^{*} To avoid overcrowding on the starting line at Brooklands in Section I, the starting times of certain competitors (marked by an asterisk in the list) were delayed by the officials.









THE "HAT TRICK": For the third time the race for the King's Cup has been won by Mr. W. L. Hope, who was flying a de Havilland "Fox Moth" fitted with the new de Havilland "Gipsy IIIA" engine. The picture on the left shows Hope crossing the finishing line. That above shows the machine taxying in. On the right Hope is seen getting out of the machine, and below, receiving, with Mr. Hagg, the 1932 King's Cup from Lord Gorell, Chairman of the Royal Aero Club. (FLIGHT Photos.)



of those who made up considerable time on their handicaps during the King's Cup race made use of the knowledge gained from Mr. Entwistle.

By 7.30 a.m. a large number of the competing aircraft had all been filled up with fuel and oil, and their pilots had begun to develop that sinking "zero hour" feeling. A plentiful supply of marshals, excellently organised, and incidentally helped throughout most of the race in a most enthusiastically efficient manner by members of the College of Aeronautical Engineering, assisted Mr. F. E. N. St. Barbe, with the result that, without a hitch, all the air-

craft were got out on to the starting line with plenty of time to spare, after which they were sent off with monotonous regularity by our old friends, Col. Lindsay Lloyd and Mr. A. G. Reynolds.

The methods of making a quick get-away varied greatly, and were interesting to watch. Some pilots adhered to the time-honoured steep climbing turn off the ground, to take up their course, which was well over 90 deg. to the right of their taking-off direction, but others—perhaps profiting from watching the Schneider Trophy Contest—made much more gentle turns, thus being able to accelerate all the

more gentle turns, thus being able to accelerate all the while. As all these turns were made directly towards us in the Control Tower, it was interesting to watch the effect of these varied methods, and it generally appeared that the pilot making the more gentle turns gained most. Several times two aircraft started together and their pilots chose opposite methods, so that quite a good comparison was possible. There were practically no untoward incidents; only about twice did machines appear even slightly to interfere with each other, and in cases like those it was impossible for an observer on the ground to say with certainty that there was any real interference.

By the time the first few aircraft had reached Bristol and their times had been signalled through to us, it was obvious that Mr. Hope was gaining on his handicap rapidly; his "shares" promptly went up and his column on the Tote chart grew black with figures.

The start was really devoid of public interest, for the combination of a two-day race, a large entry and a wide variation in the speed of the aircraft spread it over some 3½ hours, but this hardly worried the officials, as the "public" numbered exactly two (!) until late in the afternoon.







THE PRINCE OF WALES' ENTRY: Above is seen the "Gipsy Swift" taxying in after securing second place. On the right, Flt. Lt. Fielden in the door of his caravan. The "Gipsy Swift" is being groomed on the left. (FLIGHT Photos.)

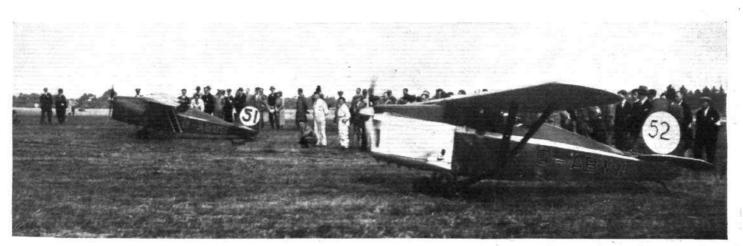


As the reports came in during Friday it became more and more obvious that Hope on the "Fox Moth," Runciman on his "Puss Moth," and Fielden on the Prince of Wales' Gipsy-engined Comper "Swift" were taking the lead.

It was a matter of very considerable difficulty to follow the progress of the race at all closely, since in the interest of safety all machines after No. 28 were started from Brooklands 40 minutes late. The announcement of speeds gave some indication of the machines which were proving much faster than expected, and quite early in the race one could thus estimate gains and losses on handicaps, but to work them out so as to get any real indication was not so easy.

The first man out of the race was Air Commodore F. E.

Guest, who returned to Brooklands in his "Tomtit" very shortly after he had started. It was gathered that he had had oiling troubles. Soon afterwards it was learnt that yet a second machine was out of the race. This was No. 14, the Blackburn "Bluebird," piloted by Mr. Clayton, who retired at Shoreham. It was found that his engine had cracked its crankcase. In all fairness to the makers, it should be pointed out that this was the winner of the King's Cup last year, so that the "Hermes II" engine had already done some very hard work. Moreover, the same engine had been used very extensively on propeller research and test work, and was thus to be considered an old engine, with a tremendous number of hardworking hours behind it. It is therefore scarcely to be wondered at that it "gave up the ghost," and its failure

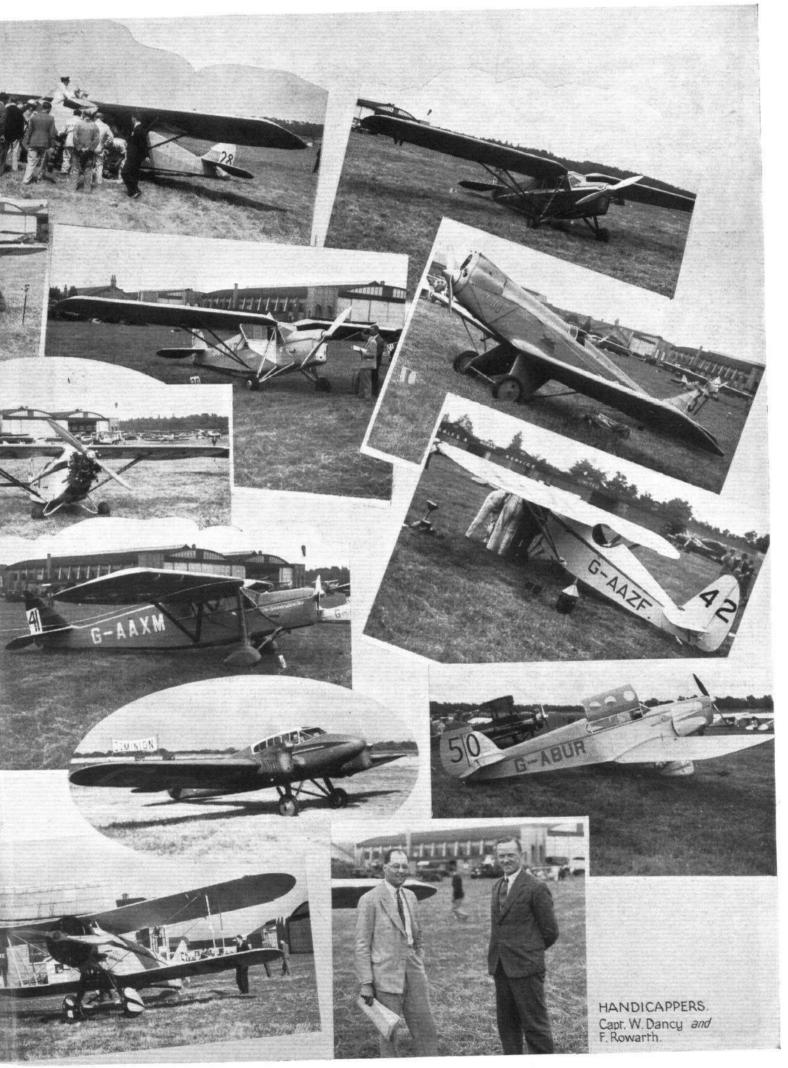


THE TWO COMPER "SWIFTS" (GIPSY III"): Fielden and Styran getting away on Friday morning. (FLIGHT Photo.)

649

of di ga ha ha in ea of B









THIRD IN KING'S CUP RACE AND WINNER OF SIDDELEY TROPHY: Mr. W. L. Runciman (right) did remarkably well, and won the praise of everybody by his splendid course-keeping. Above he is seen coming in at the end of the race, and on left, receiving the Siddeley Trophy from Lord Gorell. (FLIGHT

Photos.)



does not in any way detract from the reputation for reliability enjoyed by "Cirrus" and "Hermes" engines.

reliability enjoyed by "Cirrus" and "Hermes" engines. Of the 42 machines which started in the race, 40 were now still going. The number was reduced to 39 by the withdrawal, after reaching the Leicester control, of competitor No. 1, Mr. Legard, on an Avro "Avian IIIA" with "Genet II" engine. At Bristol Mr. Legard complained of magneto trouble, but what really put him out of the race was the fact that at Leicester his oil tank was by mistake filled with petrol. By the time matters were put right the delay was too long to be made up, and No. 1 retired from the race.

dι

ga

ha

ha A

in

en

of

Before long the number was reduced to 37. Wing Com. Robb, who was flying No. 42, Capt. Fane's Comper "Swift" ("Pobjoy R"), had the misfortune to suffer a broken oil pipe, and retired from the race at Birmingham (Castle Bromwich). Less fortunate was the pilot of No. 18, the Southern "Martlet" ("Gipsy I"), Pilot Officer Edwards. A cracked petrol tank caused him to lose all his fuel, and he had to make a hurried forced landing in a field at Sutton Weaver, near Warrington. Unfortunately, he damaged his machine rather severely, but our anxiety was allayed when the report came through that the pilot himself was unhurt.

Another blow to the Comper "stables" was suffered by the disqualification of No. 23, Mr. Lacayo, who failed to round the turning point at Woodford properly. He was unaware of the fact until he arrived at the Leicester control (Woodford being a turning point only), and by then it would have been out of the question for him to go back and still have any chance in the race.

After these various mishaps and withdrawals, there were still 36 machines left in the race, and, as it turned out, all these finished the first day's circuit. The original estimate indicated that the first man back at Brooklands should arrive somewhere around 4 p.m. However, the speeds put up by some of the competitors threw the whole timetable out of gear, and Hope on the "Fox Moth" crossed the finishing line at 3.20, having gained something like 40 minutes on his handicap. It was obvious that, if he could maintain this speed (123\frac{3}{4} \text{ m.p.h.}) on the second day, he would be next to impossible to beat.

The next machine to arrive was No. 27, the "Puss Moth" piloted by Mr. Runciman. He crossed the line at about 3.38, or some 18 minutes behind Hope. As he had given Hope a start of 38 minutes, he had caught up to the extent of about 20 minutes, and it began to look as if he might be in the running. He had averaged 130.5 m.p.h.



EARLY BIRDS: Some of the competitors on the starting line, Friday morning. (FLIGHT Photo.)



R.A.F. v. NAVY: Lt. Caspar John, R.N., and Flt. Lt. Hattersley off Friday morning. (FLIGHT Photo.)

Third man home on Friday was No. 28, Mr. Irwin in Mr. Gandar Dower's "Puss Moth." He crossed the finishing line at '3.41, 3 minutes behind Mr. Runciman. They had started level in the morning, and had thus kept remarkably close together. Mr. Irwin's average speed during the day had been 129.25 m.p.h.

After this the machines began to come in, as Capt. Alan Goodfellow said on the microphone, fast and furious. The first 15 competitors were "home" by 4.7 p.m., and included most of those who had started before the 40 minutes' delay period (which began with No. 29). Rather to everyone's surprise, the first "post-delay" man to cross the line was Flt. Lt. Fielden in the Prince of Wales' "Gipsy Swift." A gasp went up as he roared across the finishing line, and slide rules wagged cheerily in an en-

deavour to ascertain his speed. Fielden crossed the line at 8 minutes past four, and had obviously overtaken a large number of his rivals. As he was among those who had started 40 minutes late, this was equivalent to him having crossed the line at 3.28. He had averaged 157 m.p.h. for the day's course. Could he possibly overtake Hope on next day's circuits? If Hope's speed should drop a bit, and if Fielden could increase his speed slightly, it seemed possible. Otherwise not. But the general opinion was that probably Hope still had a little in hand, whereas it was thought that Fielden's speed was such that he could not possibly increase it.

he could not possibly increase it.

Capt. Broad on Lord Wakefield's "Moth" ("Gipsy III Ex.") came in about 4.22, which was equivalent to 3.42. He also had obviously been doing well, and soon it



ON THE STARTING LINE, SATURDAY: In the foreground, Miss Spooner's "Moth," and beyond that, the Blackburn B.2, Lord Douglas-Hamilton's "Moth" and Mr. Runciman's "Puss Moth." (FLIGHT Photo.)



A TRIO OF COMPETITORS: On the left a triangular view of Mr. Lowdell. On the right Lt. Caspar John and Lt. Com. Dalmeyer "looking for knots," and in the centre Mr. S. A. Thorn taking a "refresher course" at Brooklands. (FLIGHT Photos.)

was announced that his average speed had been 131.75 m.p.h. Broad's machine, No. 39, was one of the prettiest in the race.

The penultimate arrival was the Avro "Mailplane" ("Panther IIA"), piloted by Mr. H. A. Brown, Avro's chief test pilot. Brown flew magnificently, and averaged 175.5 m.p.h. during Friday's racing. As, however, he was handicapped to do about 181 m.p.h., he seemed in a fairly hopeless position (no pun intended!), although he should get the prize for fastest speed. It was even probable that he might establish a new record for the King's Cup race.

o d

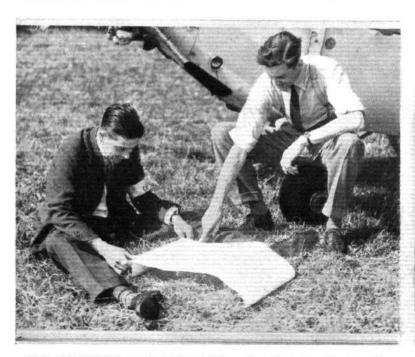
h h A ii e o E

Last home of all was our old friend Cecil Pashley on

No. 30, Gandar Dower's "Puss Moth." Pashley accused himself of very poor course-keeping, and said he had literally been wandering about "all over the country." Of the 42 machines which started, 36 finished the course on Friday.

Saturday at Brooklands

The start for the Brooklands-Bristol-Northampton-Brooklands circuit on Saturday was timed to start at 11.30 a.m. When the machines were lined up and stock could be taken, it was found that two retirements had reduced the number of starters to 34. Sqd. Ldr. Helmore did not





COMPETITORS AND SUCHLIKE: On the left, Flt. Lt. Comper, who was called in at the last minute to fly one of his own machines (No. 33), studying the map with Capt. Fane. On the right two of the second generation, Mr. Geoffrey R. de Havilland and his passenger, Mr. Peter de Havilland. (FLIGHT Photos.)

consider that his "Tomtit" (No. 26) had any chance in the handicap, and he decided not to start on Saturday's circuits. The second withdrawal was No. 32, Mrs. Butler's "Puss Moth," flown by Flt. Lt. Mellor. By the time Hope was starting, the wind had veered round towards the north, and a different starting line had to be used. For the start to Bristol this did not matter, but for the start towards Shoreham on the second circuit it did not look too good, and promised some rather nasty take-offs.

The 34 machines got away on their first circuit without incident, but owing to his unexpected speed Hope was back at Brooklands, having covered the first circuit, before Brown on the Avro "Mailplane" started! It had been the intention of the organisers to hold a small flying display during the absence of the King's Cup competitors to keep the spectators amused, but owing to the spreading which took place, there was no opportunity for this without risk of interfering with the racing. As there were not more than a couple of hundred spectators in the public enclosure, this probably did not matter in the least, the rest of the visitors being rather blase in the matter of flying, and the weather being in any case

the weather being in any case such that an opportunity for a few minutes' rest was very welcome.

At the end of the first circuit, each competitor had to make a compulsory stop at Brooklands for one hour. Hope got away promptly on time, and was followed by the other 33 machines in due course. Hope's take-off left nothing to be desired, but it was obvious that the sharp right-hand turn to get on to the course for Shoreham might prove a source of delay to several competitors, notably those with heavily-loaded machines.

Another source of worry was the number of aircraft which, or whose pilots, took it into their heads to come over and have a look at the race. Brooklands Aviation, Ltd., had notified in writing every private owner in the country not to interfere with the racing by arriving while the race was in progress, but in spite of this there were some nasty moments, one competitor at least having to be started late to avoid risk of collision, and another, the "Active II," flown by Leech, being actually balked on the starting line by a "Moth," G-AAEX, coming in to land as he was taking off.



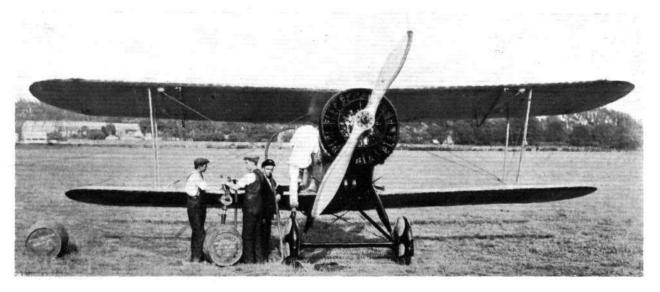
"HEAD" RESISTANCE: The head in this instance is that of Mr. Hubert Broad, who flew his open machine without wearing goggles. (FLIGHT Photo.)

In fairness to British private owners, it should be mentioned here that there were among the here that there were among the offenders very few, if any, bona fide private owners. The unwelcome visitors appeared to be mostly either trade pilots or people who had borrowed a machine for the day. It was very unsporting of them, and they ought not to have done it. At At the same time, it is only fair to say that the "spreading" of say that the "spreading" of competitors due to faulty handicapping played havoc with timetables, and that had this spreading not occurred, most of the would have visiting aircraft caused no inconvenience. As it was, red Very lights soon became scarce owing to the rather unexpected demand!

During the one hour's wait we had an opportunity to chat with some of the competitors. All were pleased with the weather, which gave excellent visibility, and, of course, a few grumbled at the handicappers. That was inevitable. Mr. Percival, who had the only specimen of the new inverted "Hermes IV" engine in his "Gull," said he had not a hope in the race, but he made a cheerful exception by saying he did not mind in the least. The "Hermes IV" engine ran with extraordinary smoothness and had not

given any trouble. The machine behaved faultlessly, all the controls being smooth and well harmonised, so why worry. He did admit, however, to having had a few moments' anxiety when an exhaust pipe burnt through and set up a clatter inside the engine cowling. Until he reached Bristol he did not know what the trouble was, but the matter was soon put right, and from then onwards all went well. The speed was well up to expectations (it turned out to be 142.75 m.p.h. over the whole course), and must be regarded as excellent for a three-seater machine.

During the start for the second and last circuit, there was a good opportunity to study pilots and machines. As previously mentioned, the starting line was so placed that the machines had to get into the air and then make a very sharp right-hand turn on to the course, almost doubling back in doing so. Broad got away extremely well on his lightly-loaded machine, but the "Gipsy Swifts," notably Fielden's machine, took nearly the whole aerodrome, and then had to climb over the trees near the Vickers works. Styran's "Gipsy Swift" had a much better take-off. One



THIRSTY HORSES: Fuelling the "Panther" engine of the Avro "Mailplane" which scored the fastest time over the course with 176 m.p.h. (FLIGHT Photo.)



THE FIRST COMPETITOR TO RETURN TO BROOK-LANDS: Air Commodore F. E. Guest came back to Brooklands a few minutes after his start. He was said to have had oiling troubles. (FLIGHT Photo.)

imagines that the difference must have been due to propeller settings, as the machines were identical to look at. Perhaps the best take-off of all was that of Flt. Lt. Healy on Mr. Wallace Barr's Avro "Avian IV M" ("Genet Major"). He was off, had turned back and was on his course before one-third of the aerodrome had been covered.

course before one-third of the aerodrome had been covered.

The Avro "Mailplane" had a broken flying wire, but through the good offices of Mr. Knight, of Vickers, this was replaced, and Brown was able to start on the last circuit, and, as it turned out later, to win the prize for the

cuit, and, as it turned out later, the fastest time, and, incidentally, to establish a new speed record of 176 m.p.h. for the King's Cuprace. (The previous "record" was, curiously enough, also established on an Avro machine, the "Avenger," piloted by Mr. Summers in the 1928 race. His speed was 171 m.p.h.)

tc

di ge hi

h

A

ei of

B

The Finish

Reports from the Shoreham, Portsmouth and Bristol turning points in the last circuit were somewhat late in coming in, but Hope was duly reported from each, and when he crossed the finishing line at about 4.28 p.m. no one was surprised. His speed over the whole course works out at 124.25 m.p.h., or 14 m.p.h. more than his handicap speed! When Hope had handed his machine over to the official inspectors and walked into the enclosure, he was quickly surrounded by friends who wanted to know "all about it."

At about 4.48 Fielden arrived in the Prince of Wales' "Gipsy Swift," but did not remember that for the finish the line had been moved, and did not cross it. Great excitement, waving of hands, and bellowing of loud-



HOOTON REPRESENTATIVES: Wing Com. Robb and Mr. I. C. Maxwell, of Pobjoy Airmotors, discuss the chances. (FLIGHT Photo.)

speakers. When the machine had come to a standstill and a marshal could get to it, Fielden was told of his omission. He at once took off, made a left-hand turn around the aerodrome, and crossed the line properly in flight. His official time was 4.50.58. His Royal Highness had secured second place.

It was generally expected that Mr. Runciman would be third man home, and at 5.03.20 he crossed the line on his "Puss Moth" ("Gipsy III"), No. 27. The rest of the machines came in at varying intervals, and more than one failed to cross the new finishing line and had to take off again in order to cross it properly. The "Gipsy Swifts"

appeared unlucky in this respect, as Styran's also had to take off again and cross properly.

The order of finishing for the

first 12 machines home was as follows: 7, 52, 27, 28, 39, 36, 15, 31, 38, 46, 51, 50. Hope crossed the line at 4.27.47, and Percival at 5.18.42. Of the 34 machines which started on the last day's circuits, 34 finished. Our aero engines certainly are getting very reliable!

When the last machine had arrived home, the cups and prizes were presented to the various winners by Lord Gorell, chairman of the Royal Aero Club. Mr. Hope received the King's Cup and a first prize of £250 offered by Lord Wakefield of Hythe. Flt. Lt. Fielden received a second prize of £100, also offered by Lord Wakefield, and Mr. Runciman received Lord Wakefield's third prize of £50, and the Siddeley Challenge Trophy presented by Sir John D. Siddeley, C.B.E. Mr. H. A. Brown received Lord Wakefield's prize of £100 for the fastest time around the course.

The Light Aeroplane Clubs in the running for the Siddeley Trophy, and the racing numbers



EQUAL TO THE BEST OF THEM: Miss Winifred Spooner gets into her "Moth." (FLIGHT Photo.)





WHAT ARE THE CHANCES?: On left Flt. Lt. Johnson and Mr. H. Broad talk things over. On Mr. C. A. Thornton discusses with Mr. Capel and Mr. Olney the prospects of the Hermes-engined (FLIGHT Photo.) On the right ed "Active."

of their representatives, were as follows: Hampshire (50), Herts and Essex (8), Lancashire (16 and 23), Leicestershire (6), Liverpool and District (10), London (20 and 45), Newcastle (27), and Royal Naval (11 and 36).

At the Bristol Control

Although Bristol was one of the two "controls" where competitors in the King's Cup race had to land and remain for 40 minutes, apart from a good number of enthusiasts chiefly associated with the Bristol and Wessex Aeroplane Club, there was but a small section of the general public present at the Bristol Airport at Whitchurch on Friday morning, many hundreds being obviously prevented from attending owing to business reasons.

The weather was perfect, and practically without exception pilots reported that visibility had been good, while the majority were pleased with their performances.

The first plane to arrive-considerably before any was expected—was piloted by Capt. W. L. Hope, his passengers being his brother, Mr. Cyril Hope, and an engineer. Their arrival in the D.H. "Fox Moth," entered by Mr. A. E. Hagg, was but the beginning of a constant stream of planes, many flown by famous pilots, which swooped out of a blue sky at high speed and raced across the white line which had been marked exactly at right angles to the course by Capt. L. P. Winters, the Chief Steward (representing the Royal Aero Club), by means of a compass. Capt. W. L. Hope, who won the race in 1927 and 1928, had made excellent time and was quite pleased with his speed.

The second arrival was Miss Winifred Spooner, who with Miss Winifred Brown were the only two women competitors. She was wearing white overalls, and on landing produced a comb and tidied her dark bobbed hair. Her next action was to light a cigarette, and then she personally directed one or two adjustments to her engine.

Disappointment was expressed when it became known that the machine entered by Capt. F. E. Guest, formerly M.P. for Bristol North, had been scratched from the race, thus decreasing the already small local connections Bristol had in the race.

One of the very few pilots who had experienced engine trouble was Mr. J. F. Legard, flying his Avro "Avian IIIA" with a "Genet II" engine. Although he was the first to leave Brooklands, he made a late arrival, and said that he had had engine trouble, one of his "mags" not working at all well. It lates transpired that he working at all well.

working at all well. It later transpired that he withdrew from the race at Leicester.

Miss Brown, who won the race in 1930, said she had a very nice trip, but was not perfectly satisfied with her She spent most of the 40 minutes sitting beside engine. her machine talking to her partner, both looking very bronzed.

The rush had now come, and in several cases only seconds separated the planes as they dipped over the control line before circling round to land. Officials were waiting with refreshment

for pilots and passengers, and it was noticeable that practically all pilots asked for ginger beer.

Many spectators awaited with interest the arrival of the "Puss Moth" entered by Mrs. Alan Butler, whose husband is a Bristolian and chairman of the de Havilland Company. It was piloted by Flt. Lt. H. M. Mellor.

The non-appearance of Mr. R. T. M. Clayton,

who should have been among the first batch of planes, gave rise to anxiety, and relief was felt when a telegram was received explaining that he and his partner had made a safe but forced landing at Shoreham and had retired from the

Spectators were eagerly going from one aeroplane to another, and there was certainly a remarkable variety to be seen—from the smart little Comper "Swifts" to the magnificent Avro "Mailplane" entered by Sir J. D. Siddeley, C.B.E.

Undoubtedly the plane which attracted most attention was that entered by the Prince of Wales, and flown by Flt. Lt. E. H. Fielden, A.F.C., his personal pilot. From the moment it landed, it was besieged by a crowd of interested spectators, who admired the red, white and blue body and the compact arrangement of controls and numerous gadgets. Flt. Lt. Fielden showed in business-like directions to the mechanics that his one ambition was to win the



A DE HAVILLAND GROUP: Left to right, Mr. Hagg, Mr. Peter de Havilland, Mrs. de Havilland, Mrs. Hope, Capt. G. de Havilland and Mr. F. E. N. St. Barbe. (FLIGHT Photo.)

race for His Royal Highness, and his constant glances at his wristlet watch revealed that he was anxious to be away. He described his trip as "lovely," and when he arrived at Bristol he had considerably reduced his handicap—in fact, his performance on the first lap was one of the best.

The last competitor to arrive was Mr. H. A. Brown in the handsome yellow Avro "Mailplane." "Everything's O.K.," were his first words as his machine made a perfect landing. Undoubtedly he was well pleased with the high speed at which he had completed the first part of the race, and he was the most jovial of all the competitors. He spent most of the 40 minutes laughing and chatting to friends, and his constant laughter and willingness to reply to spectators soon 'established him as a favourite. After he had climbed back into the cockpit, there were a number of handshakes and he left with the good wishes of many present.

Among those who visited the Airport on Friday were Lord Apsley, Mr. Downes Shaw, Ald. A. A. Sennington (chairman of the Airport Committee). and Mr. C. G. Maby. Chief

Constable of Bristol.

g

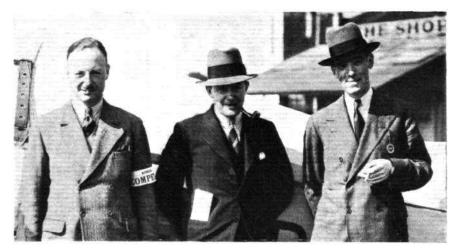
h

В

Officials for the race at the Airport were: —Capt. L. P. Winters, chief steward and referee; Lt. Col. A. H. Lough-



THE "TOTE": Backers of Fielden for place did better than those who had backed Hope to win. (FLIGHT Photo.)



"UP TO SCRATCH": Left to right, Mr. H. A. Brown, pilot of Avro "Mailplane," Mr. Dobson, works manager at Avro's Manchester Works, and Maj. Scott, general manager of A. V. Roe & Co., Ltd. (FLIGHT Photo.)

borough and Mr. T. D. Dutton, timekeepers and starters.

There was a larger attendance on Saturday and glorious weather conditions prevailed. Although competitors had twice to visit the Airport, there was no landing, but the enthusiasts present derived plenty of thrills in watching the planes come out of the sky at a tremendous rate to cross the white line.

It was generally expected that Capt. Hope would be the first to reach Bristol, and he did so at 12.16, being quickly followed by Miss Winifred Spooner. Capt. Hope's speed for the 91 miles was 118.7 miles per hour, and Miss Spooner's 105.

There was a cheer when the Prince's plane was sighted, and speculation ran high when it became known that it had made the highest speed of the day, Flt. Lt. Fielden completing the course from Brooklands to Bristol at an average speed of 157 miles an hour.

The course was Brooklands-Bristol-Northampton back to Brooklands-Shoreham-Portsmouth and Bristol, and then the final dash to Brooklands, so that spectators at the Bristol Airport had a very fine chance of excitement.

Capt. Hope was again leading the field, and was the first to pass the line on the final journey. In vain spectators searched the skies for a rival, but a quarter of an hour had elapsed before another black speck was sighted.

Flt. Lt. Fielden, piloting the Prince's aeroplane, was second, and although he had made a wonderful attempt, it was felt that he was too far behind to overtake Capt. Hope.

A.L.C.E.

At the Leicester Control

Right from the early hours of the morning, it looked as if we were going to have ideal weather. Clouds were (Concluded on p. 676.)



A VERY FAST THREE-SEATER: The Percival "Gull" did not get a place in the King's Cup, but it put up a very good performance. The new "Hermes IV" inverted engine gave no trouble whatever. (FLIGHT Photo.)

Air Gransport



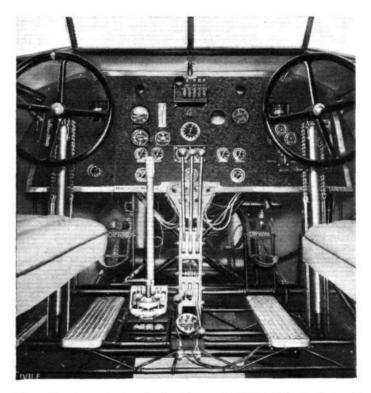
CAPRONI 101 "NORD-AFRICA"

THREE-ENGINED monoplane has been produced recently by the Caproni Company for use on the Lybian colonial air lines operated by the company "Nord-Africa Aviazione S.A.," which has its base at Bengasi. The machine in question belongs to the Caproni 101 class, but differs from the standard type in the power plant and other minor modifications arising from the special requirements of the Lybian service.

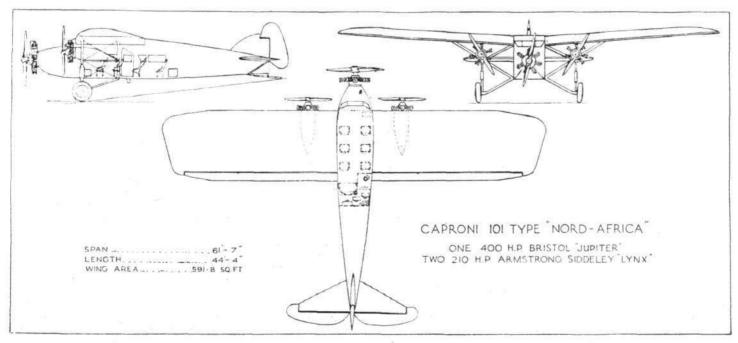
The operation of an air service in a country like the Lybian Desert naturally calls for certain requirements in the design of the machine. For instance, there is the problem of forced landings in the desert, where suitable ground is not always available and help would be difficult to obtain—either for repairs or aid for the crew in the event of a crash. Ample reserve of power has, therefore, been provided to meet this, the machine being equipped with three engines, and is capable of flying with either the central engine only in action or the two wing engines. In the event of a forced landing, however, the "Nord-Africa" has been provided with an extra wide-track undercarriage.

Another item to be considered is that of sand storms, and here it is essential that the machine should be capable of climbing rapidly to higher altitudes in order to escape them.

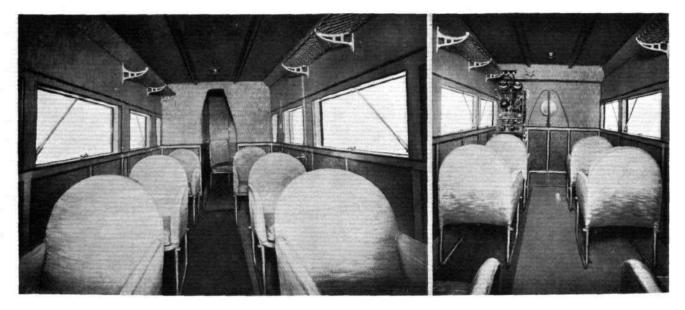
Finally, the transport of passengers in this part of the world calls for a special arrangement of the cabin, inasmuch



The pilots' cockpit of the Caproni 101 "Nord-Africa." The engine control levers and brake lever are seen between the seats.







Two interior views of the cabin of the Caproni "Nord-Africa." On the left, looking aft, showing at the extreme rear the 2nd Class compartment. On the right, looking forward, showing the wireless installation in forward left-hand corner.

as it is desirable to have separate sections for European and native passengers—and so a "second-class cabin" is

provided.

The "Nord-Africa" is a semi-cantilever high-wing monoplane fitted with a 400-h.p. Romeo "Jupiter" in the nose and two 210-h.p. Romeo "Lynx" engines on the wings. The latter are located in nacelles mounted on a system of wing and fuselage struts below the wings. The central engine is separated from the pilot's cockpit by a fireproof wall.

The wings—of wood and steel construction, fabric covered—have a semi-thick section and a slight dihedral angle; balanced ailerons are fitted. The bracing struts extend from the lower fuselage longerons to the engine nacelles, and thence to the wing spars; struts also run from the engine nacelles up to the top fuselage longerons.

In the front of the fuselage, at the leading edge of the

wings, is the pilot's cockpit, with sliding windows. Dual control of the wheel and pedal type is provided, the engine control levers and brake lever being located centrally between the two seats. Below the left-hand seat is the "Garelli" compressor starter, while near the right-hand

seat is the wheel for adjusting (during flight) the incidence of the tail plane. Back cushion-type Salvator parachutes are fitted, while a trap-door in the floor not only affords additional visibility downwards, but also provides a means

of escape, if necessary, by parachute.

Immediately behind the pilot's cockpit is the first-class cabin, with six seats, three aside, next to large sliding windows. In the forward left-hand corner is the wireless transmitting and receiving installation—a Marconi long-wave type. At the rear of the cabin is the second-class cabin, with a two-seat sofa, on the right of which is the lavatory. Behind this again is the luggage and mail compartment. A windmill-operated Marelli description partment. A windmill-operated Marelli dynamo-accumulator plant provides the electric current for lighting, etc.

lator plant provides the electric current for lighting, etc.
The principal characteristics of the Caproni 101 "Nord-Africa" are:—Span, 61 ft. 7 in.; O.A. length, 44 ft. 4 in.; wing area, 391.8 sq. ft.; weight, empty, 6,615 lb.; useful load, 4,410 lb.; total weight, 11,025 lb.; speed, maximum, 130.5 m.p.h.; cruising, 118 m.p.h.; landing, 56 m.p.h.; climb, to 3,218 ft., 5 min. 30 sec.; 12,870 ft., 43 min.; ceiling, 16,090 ft.; range, 500 miles.

C. DE R.

New Planes for New York-Washington Speed Service
THE Ludington Line, which, since September, 1930, has operated an hourly passenger and express service between New York and Washington without subsidy in the form of mail contracts, has taken delivery of the first of three new 9-seater Consolidated Fleetsters. The first of three new 9-seater Consolidated Fleetsters. line will provide a regular express service of 80 min. between Washington and New York. The new Fleetster is a vast improvement over earlier models in many respects. The maximum speed is 180 m.p.h. and the machines will be equived in regular service at about 155 m.p.h. The be cruised in regular service at about 155 m.p.h.

landing speed is listed as between 50 and 55 m.p.h. The power plant is a 550-h.p. Wright "Cyclone," mounted in a full N.A.C.A. cowling. Landing gear is of a two-strut type and "super-balloon" airwheels are used for landing gear and tail. An interesting feature is the application of rubber strips to the leading edges of the high monoplane wing and the rear stabiliser to prevent heavy rains damaging the finish under the terrific impact generated at high speed. Amelia Earhart Putnam is a Vice-President of the Ludington Line—and her Atlantic "Vega" was formerly in regular service on the line.

5 S

Model Engineer Exhibiton

Engineering, railways, shipping and aviation in miniature, as well as light machine tools and small power equipment, will be represented at the Fourteenth Annual Small Power Engineering and Electrical Exhibition to be held at the Royal Horticultural Hall, Westminster, from September 1 to 10.

Explaining the Interior

THE modern youth is intensely interested in flying. He knows the points which distinguish in external appearance one make of aircraft from another. The time has gone when every small aeroplane was, to him, a "Moth," and every large aircraft a Handley Page. But he very often has not had an opportunity to see the internal structure of an aeroplane, although once it is explained to him he grasps the principle readily. A welcome aid towards explaining the internal anatomy of an aeroplane is a book of coloured plates recently published by Shell-Mex & B.P., Ltd. The plates are large and very clear, and successive layers can be lifted up to show the structure which lies beneath the external covering. All controls are shown in a similar manner, and the large plate which exposes the four-cylinder-in-line engine shows successively the external view of the cowled engine, the mounting of the engine in the fuselage, and the engine itself sectioned to show pistons, etc. The book, which is entitled "The Modern pistons, etc. The book, which is entitled "The Modern Aeroplane," must have been an expensive publication, and obviously cannot be issued wholesale, but any reader of FLIGHT with a reasonable claim to consideration may obtain a copy free by writing to Shell-Mex & B.P., Ltd., Shell Corner, Kingsway, London, W.C.2.

R.Ae.S. President At the last meeting of Council the following officers of the Society were elected for the year 1932-33. President: Mr. C. R. Fairey, M.B.E., F.R.Ae.S. Vice-Presidents: Prof. L. Bairstow, C.B.E., F.R.S., F.R.Ae.S.; Air Marshal Sir R. Brooke Popham, K.C.B., C.M.G., D.S.O. A.F.C., F.R.Ae,S.; Mr. A. F. Sidgreaves, O.B.E.

now Leval FLIGHT, JULY 15, 1982

The A.W. XV Monoplane

(Continued from p. 623.)

AST week considerations of space prevented us from referring to the structural features of the A.W. XV monoplanes designed and built by Sir W. G. Armstrong-Whitworth Aircraft, Ltd., for Imperial Airways, Ltd., for the African sections of the London-Cape Town air route. The main features of what may be termed the aerodynamic design were dealt with, but as certain data relating to the machine have now become available, an examination of these may be of interest before we take up the structural side.

The table of data shows that the certificate of airworthiness covers a gross weight up to 20,000 lb. As the tare

weight, i.e., weight of the machine completely equipped, with cabin furnishings, etc., but without load, crew, fuel or oil, is 13,940 lb., we obtain a ratio of gross weight to tare weight of 1.435. Put in a different way, the machine carries as disposable load 43.5 per cent. of its

own weight.

Comparisons of machines on this basis are always apt to be a little doubtful, since the definition of tare weight is somewhat vague. In this case, however, the tare weight includes everything; in other words, the weight of the machine in full flying trim, but without any of its disposable load. The ratio of 1.435 may appear slightly low, but it should be remembered that, for one thing, the machine is a cantilever monoplane, and also that it is designed to have a rather large power reserve, which is merely another way of saying that it carries a considerable surplus of engine weight as well as engine power. Taking these considerations into account, and remembering also that the machine is quite a large one, the ratio of gross to tare weight is by no means bad, the more so as clean aerodynamic design rather than very low structure weight has been the aim of the designers.

When petrol for a range of 400 miles is carried, the pay load is 4,350 lb., which corresponds to 3.2 lb./h.p.,

ARMSTRONG-WHITWORTH A.W. XV MONOPLANE

4 " Double Mongoose " Engines

			and the second s				
		I	imension	15			
Length o.a.					ft. 71	in.	m. 21,80
		81.1	5.55	* *	90	0	
Wing span			908		231751		27,45
Overall heigh	gnt	* *			14	0	4,26
			Areas				
					sq	. ft.	$m.^2$
Main plane	(total)	100	00000		1,28	85	119.5
Ailerons			02747		13	$31 \cdot 7$	12,2
Tail plane	***	6060	55050	503	1.	54	14,3
Elevator	200	4000		800		58	5,4
Fin		200				$22 \cdot 2$	2,1
Rudder	20.00	4	5,350	8.06	9	60	5,6
incie	. 13	10	Harris moreon				
contract			Weights				
1,1						lb.	kg.
Tare	21,000				13	3,940	6 340
Petrol and	oil		700.0		1	,600	729
Pay load	26.60					1,350	1 978
Max. perm	icaible (TTARE	wt			0,000	9 100

Range

400 miles (640 km.). If pay load is reduced to 3,500 lb. (1 590 kg.) the range can be increased to 600 miles (965 km.)

Performance

At present no performance figures are available, as the first machine has been but recently finished

based on normal power. Again, one should remember that a large power reserve has been a fundamental design feature, so that the pay load per horse-power actually used

at cruising speed is probably very much greater.

At full gross weight, the wing loading is 15.5 lb./sq. ft., and the power loading 14.7 lb./h.p. We gather that in and the power loading 14.7 lb./h.p. We gather that in the form in which the A.W. XV is to be used in Africa it

will not be loaded up to the full gross weight permitted by the C. of A., but will gener-ally weigh some 18,000 lb. laden. This will bring the wing loading down to 14 lb./sq. ft., and the power loading (normal) to 13.25 lb./h.p. The minimum speed will probably be in the neighbour-

hood of 60 m.p.h.

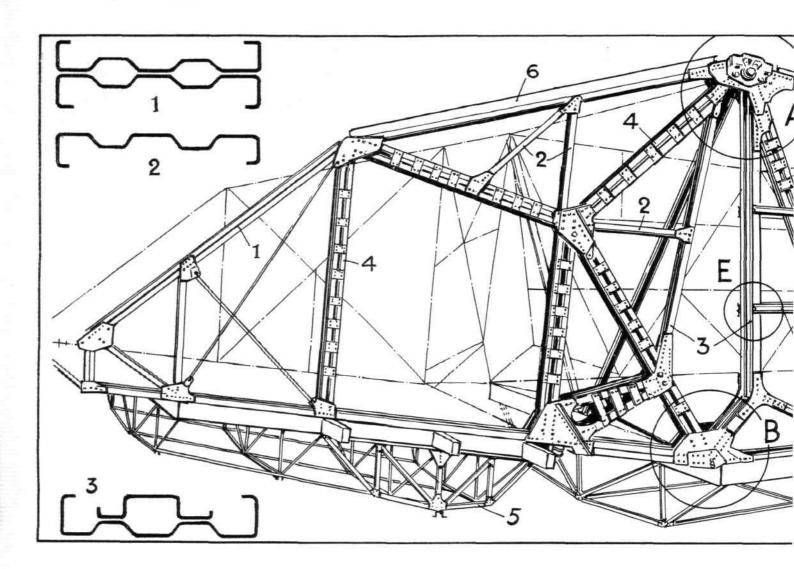
Actual performance figures are not yet available, but it is thought that the cruising speed will be 120 m.p.h. or a little A rough estimate which we have made indicates that the maximum speed (which is not, of course, a criterion of a machine's usefulness as a commercial proposition) should, for such a clean design be rather more than 140 The actual figure will be available when the first machine has passed its tests at Martlesham.

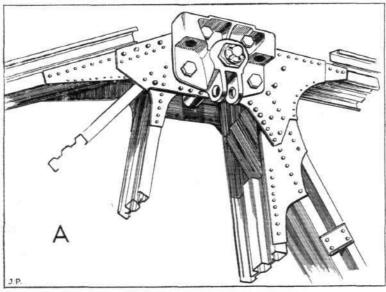
Structural Design

Interesting as is the A.W. XV from an aerodynamic point of view, it is no less so when one has the opportunity, as we had recently, of examining the in-ternal structure. Apart from the general system of construction adopted, one is particularly impressed by the amount of thought which has obviously been given to the subject during the planning stages. Too frequently one sees an aircraft in which one feels that the general primary structure was decided upon without a great deal



THE "ATALANTA" IN FLIGHT: This view from above gives a good idea of the plan form, and also shows the neat merging of the engine housings (FLIGHT Photo.) into the wing surface.

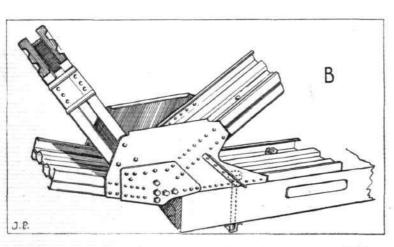


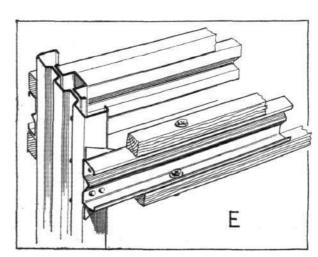


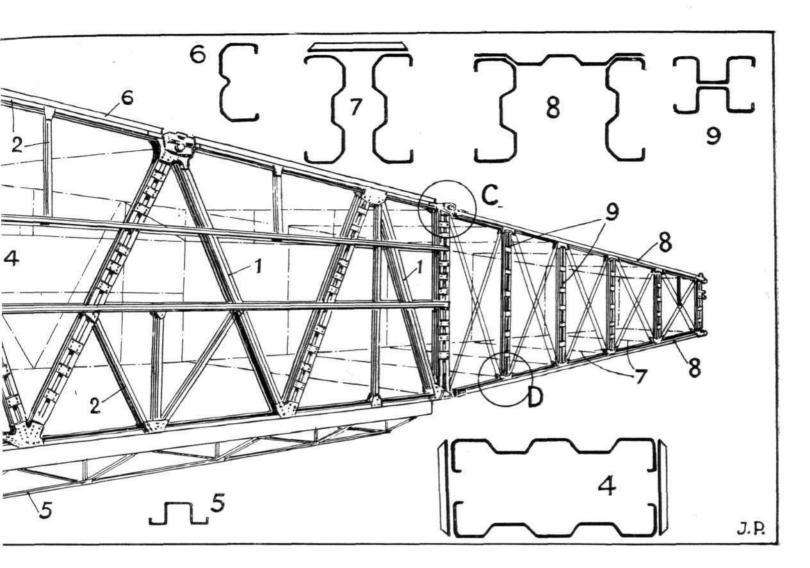
of regard for the secondary structure, or for local problems cropping up at points where several members meet, or where pieces of equipment have to be attached. One has the feeling that the designer left such consideration to chance, regarding them as bridges to be crossed when he came to them. In the A.W. XV machines, on the other hand, one feels throughout that every last detail has been thought of and allowed for before the general "scheme" of construction was finally chosen. The result is that no awkward joints are found anywhere, no makeshift fittings to get over problems which had not been properly considered beforehand. In other words, there is something very "finished" about the A.W. XV structure in an engineering sense.

The Fuselage

Generally speaking, use is made, in the A.W. XV machines, of steel strip formed into open-channel sections. The actual sections differ slightly according



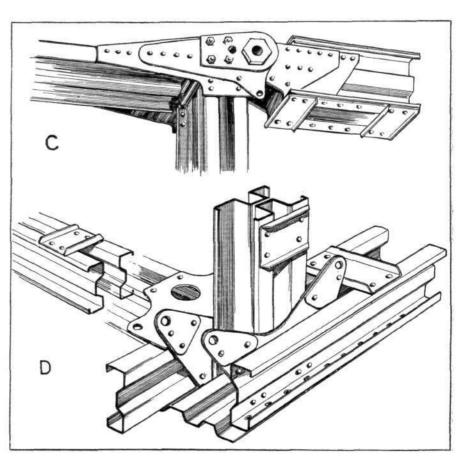




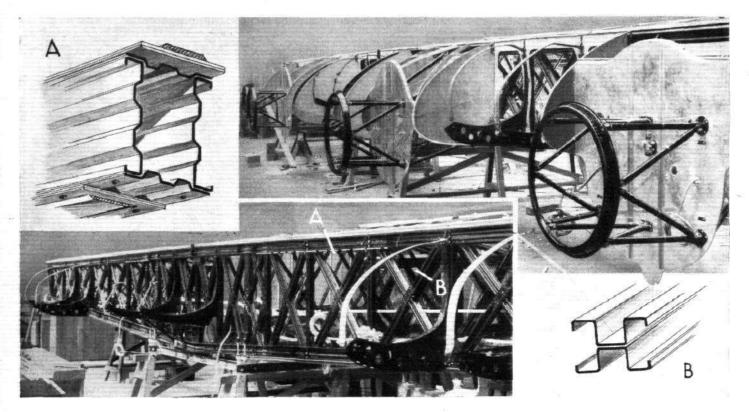
to where in the structure they are used, but the general principle remains the same, i.e., open-channel sections placed back-toback. The sketches on this page show the fuselage construction very well. At the top of the page is a sketch of the general layout of the primary structure, with the various types of sections used and reference letters showing where they occur. In the lower sketches our artist shows how very simple the joints are, the primary structure having been designed not only to give a form of construction which makes all rivets, etc., very accessible, but also to provide simple joints where two or more members meet. Over the cabin portion the longerons and diagonal struts are formed by two channels back-to-back, and the flanges are steadied by distance plates spaced at in-tervals of a few inches. The struts are attached to the longerons by simple flat plates, the resulting joints being very simple and light.

The rear portion of the fuselage has longerons and vertical struts, the latter being of the section shown in sketch D. Bracing is by R.A.F. wire, and is made very strong by being duplicated, so that it has been possible to do without wire bracing in the transverse panels. The extreme tail end of the fuselage is a separate unit, making three in all for the fuselage.

The secondary structure of the fuselage is mainly of wood, the covering over the cabin portion being three-ply carried on light stringers secured to the steel structure by wood screws. Over the rear portion of the fuselage the covering is fabric. This is carried on the four corners only, which are well rounded and formed by aluminium sheet. There are no stringers, but the fabric is taped on at intervals.

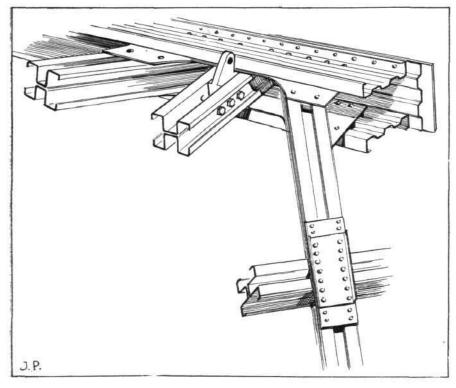


THE A.W. XV.: In C is shown the joint in the upper fuselage longeron, while D shows the construction used in the rear portion of the fuselage. (FLIGHT Sketches.)



The front spar, with bearers for engines and petrol tanks.

The insets show sections of spar booms and ties.



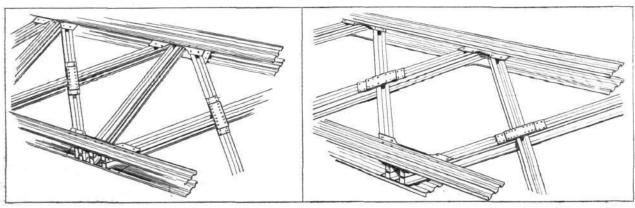
The Wing

An unusual combination of materials has been chosen for the wing structure. The two main spars are steel girders, and the wing ribs are of wood, except over the central portion, where concentrated loads are caused by the mounting of engines, petrol tanks, etc., on the front spar. The wing covering is plywood. For ease of transport the wing is built in three portions, and use has been made of taper cones at the joints to prevent any possibility of play and rattle developing.

bility of play and rattle developing.

The main wing spars are, as already mentioned, steel girders. They are built up from steel strip formed into channel sections, and some of the details are indicated in the sketches herewith. The rear spar has its top and bottom booms joined by a series of plain X-formation struts, while the front spar, which has to carry the loads of engines and tanks, has its bracing members arranged with vertical struts alternating with X's thus: XIXIXI

A feature not illustrated by sketches, but worth mentioning, is that the floor of the cabin has been built as a complete unit. The floor itself is of fairly thin plywood, carried on a wooden grid having cells



(Flight Sketches)

of some 6 in. square. The whole is braced by a system of Duralumin girders under-neath, the girders being "buried" in the bottom fairing of the fuselage.

A great deal of trouble has been taken

to reduce noise in the cabin, the space between the outer plywood covering and the inner walls being liberally lagged with Capoc.

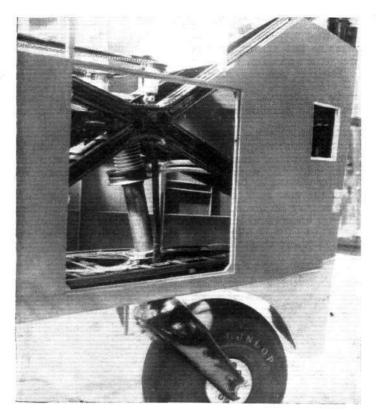
The Undercarriage

We referred briefly last week to the ingenious arrangement of the undercarriage, whereby most of the members are enclosed within the sides and bottom of the fuselage. The wheels are Dunlops, fitted with Palmer brakes, and are carried on axles hinged on the centre line at the bottom of the fuselage and sprung by telescopic struts running to the top corners of the fuselage. The axles are forgings which taper in form and thickness, and which are, moreover, bent at the outer ends to bring the wheels vertical. The manufacture of the axles must have presented some rather pretty problems.

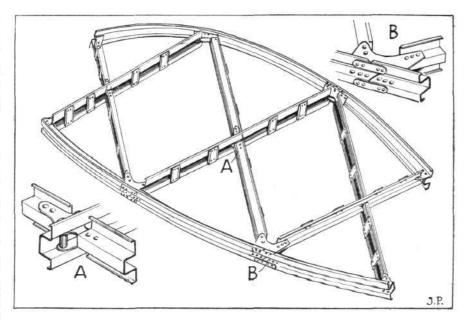
The radius rods are sheet steel members, each being built up of two channels, back-to-back. They act at the same time as torque rods for the axles, and are entirely

housed in the fuselage fairing. The tail wheel is a lowpressure Dunlop, and its mounting is shown in the photograph on this page.

In the same photograph may also be seen some of the details of the tail-trimming gear. The tailplane is a pure



THE TAIL WHEEL: This is of the castor type, and has a very short travel. Details of the tail-trimming gear can also be seen. (FLIGHT Photo.)



THE METAL RIBS: These are used in the central portion of the wing only, the other ribs being of wood. (FLIGHT Sketch.)

cantilever structure, and the front spar is carried on two adjustable points, one on each longeron. This form of mounting has resulted in a very rigid structure, a necessity when it is remembered that the tailplane spars are cantilever beams.

The Engine Installation

As mentioned last week, the power units of the A.W. XV are "Double Mongoose" engines of a normal power of 340 b.h.p. This engine is of the two-row radial air-cooled type, with five cylinders in each row. The engine is of the moderately supercharged type, and develops a maximum of 375 b.h.p. at 2,200 r.p.m. and at an altitude of The normal power is developed at 2,000 r.p.m. and at 4,000 ft.

The engines are mounted on the front spar of the wing in the manner shown in the photograph on p. 664. It will be noted that the engine mounting is very "open," so that access to the back of the engines is facilitated.

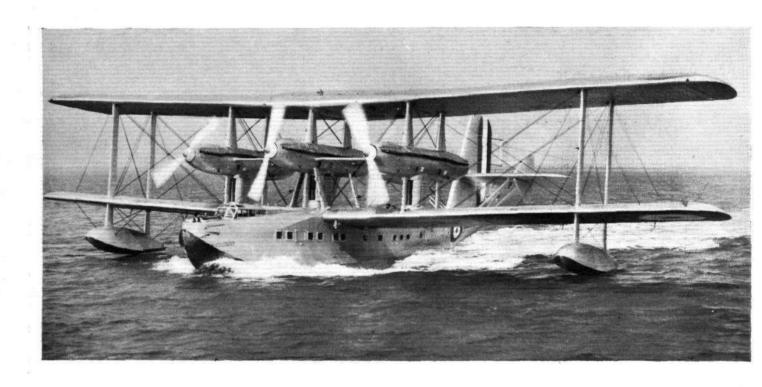
The arrangement for starting the engines is interesting. Each inboard engine is fitted with a Herzmark compressor, driven at engine speed and pumping at a pressure of 275 lb. per sq. in. From the two air bottles there is a connection to a Viet auxiliary hand pump, from which the supply reaches the distributors. The air in the two bottles is also used for operating the wheel brakes, the pressure required here being 100 lb. per sq. in.
Ignition is by 10-cylinder B.T.H. magnetos,

magnetos, and the fuel mixture is supplied by a Claudel Hobson carburetter,

type A.V. 80 A.

The petrol is carried in tanks in the leading edge of the wing, but in spite of this simple gravity feed suffices. There are two tanks one on each side, placed between the two engines on that side and normally supplying them. It is, however, possible to supply all four engines from either tank by opening the equalising cock in the petrol system. When this is done, and if one engine stops, the other three are supplied from both tanks. It has been found that a sufficient supply is provided when the fuselage is horizontal, and as the machine is not likely to climb steeply for long periods under these conditions, the arrangement is considered satisfactory.





THE SHORT R.6/28 FLYING BOAT "PRESENTED"

N Monday last representatives of the Press, the aircraft industry and many other friends of Short Brothers had been invited to view the new sixengined flying boat launched recently. The party boarded a paddle steamer at Strood and were taken down the Medway towards Kingsnorth, where the machine was moored.

As soon as the party arrived, the crew began to start the six Rolls-Royce "Buzzard" engines, accomplishing the task in about four minutes by hand turning! Mr. Lankester Parker was at the controls, and next to him was Maj. Brackley, of Imperial Airways. After warming up the engines Mr. Parker took off right alongside the steamer, and thus gave everyone a perfect view of the clean behaviour of the boat on the water. For the next half-hour or so Mr. Parker showed the new boat's paces, and then alighted alongside the steamer again, the "amerissage" being as clean as the take-off.

being as clean as the take-off.

The new boat, at present known as Flying Boat R.6/28, is of extremely pleasing lines, and the tandem arrangement of the six engines results in a very low frontal area.

The machine is entirely of metal, with the exception of the wing covering, which is fabric doped with Cellon. The machine has a wing span of 120 ft., and the total loaded weight is approximately 70 000 lb.

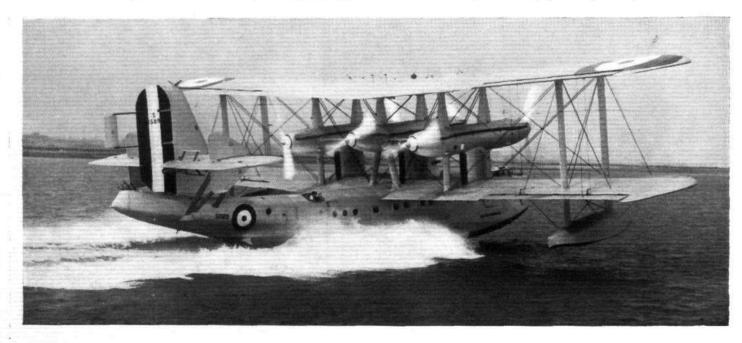
weight is approximately 70,000 lb.

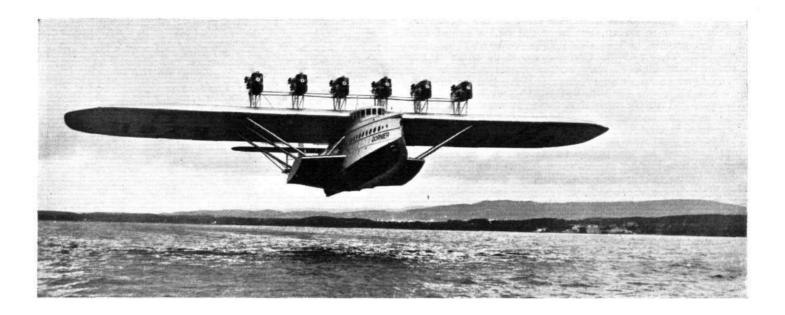
The six engines are Rolls-Royce "Buzzards," type III MS. The airscrew gearing has a ratio of 0.477:1, and the normal power is 820 b.h.p. at 2,000 r.p.m. at sea level. The maximum power is 930 b.h.p. at 2,300 r.p.m. at sea level.

Mr. Parker's masterly handling of the machine was greatly admired, and after the demonstration he had to come aboard the steamer and be photographed, filmed and "talkied." Even this did not seem to disturb him. We wonder what would give Parker stage fright!

wonder what would give Parker stage ingnt:
As the new machine is a military type, no performance figures may be given, but the boat is certainly very fast, and we understand it will have a very useful range. When we need the really large commercial flying boat, the R.6/28 Short should provide a useful basis to work from.

(See Photograph on p. 643.)





Do.X.

by E. C. Gordon England

Our contributor was one of the fortunate persons to make the journey from Calshot to Berlin in the Do.X., and his account gives our readers an excellent impression of this enormous flying boat

AVE you ever got out of bed at 4 o'clock in the morning with the greatest reluctance and dubbed yourself a fool for weakly agreeing to embark on an enterprise at so unearthly an hour?

Doubtless you have, and so did I on Tuesday, May 24,

Doubtless you have, and so did I on Tuesday, May 24, having lightheartedly agreed the night before, to go down the next morning from London by car with Dr. Dornier and his charming wife to Calshot, and there to see them off on the final stage of the Do.X's trip from New York.

London at 5 o'clock on a pouring wet morning does not stimulate light or joyous thinking. How I wished that people would choose more agreeable hours for departure! Secretly, I think, we all felt that it was an unnecessarily early hour to start, because through the pouring rain on the trip down we kept assuring one another that visibility would doubtless improve shortly!

visibility would doubtless improve shortly!

As Calshot came in sight there was the Do.X, hardly visible against the grey sky and sea, dwarfing entirely the large Air Force flying-boats moored alongside her.

Dr. Dornier and Capt. Christiansen had decided to leave at 8.30, but this was impossible.

at 8.30, but this was impossible.

On board we were met on the stub wing by Capt.

Christiansen, the pilots, officers and crew, who were each

in turn warmly congratulated by Dr. Dornier on their splendid achievement.

Fraulein Strassmann, who had made the trip from New York, was also introduced. She can hardly be termed a passenger as she appointed herself stewardess and general ministering angel to the needs of the captain, officers and crew. Everybody agreed that she was very efficient and indefatigable in her efforts. Historically, she will probably be able to claim that she acted as first stewardess in an air liner on a transatlantic flight.

I was immediately impressed with the splendid condition of the ship both externally and internally at the end of its 15 months' sojourn away from its native hangar. During the whole of this time the ship has not been under cover. Her condition gives the lie direct to those prophets who predicted corrosion and deterioration, for there is not the slightest evidence of this anywhere.

Equally interesting is the fact that all the internal appointments are in first-class condition throughout, and, while some people may not appreciate the decorative schemes of the interior, these have retained entirely their

freshness and are none the worse for wear.

The impressiveness of the immense size and spaciousness of the Do.X was perhaps even more accentuated than on the previous occasion when I went on board this vast vessel as she set out from Calshot for her Atlantic adventure. I found myself slipping into the same difficulty, that of realising that it was an aircraft and not a seacraft. It is extraordinary how what one may term the "aircraft sense" entirely disappears in the Do.X.

On the way down in the car I had jokingly asked Dr. Dornier what was the law in connection with stowaways in aircraft, and I mentioned while we were waiting for the weather to clear how very much I envied them the experience of the trip they were then setting out on.

The Master of Sempill, who had flown through the pouring rain in the early morning from Hanworth in his "Puss Moth," was saying good-bye to Dr. Dornier. Presently came the cry, "All visitors ashore," and the many R.A.F. officers and others who had been inspecting the ship went ashore, when Dr. Dornier came up to me and said, "I hear from the Master of Sempill that unless I offer to take you to Berlin I am likely to have a stowaway on board, and therefore I am inviting you to accompany us."

Without hesitation I accepted his very sporting offer. Items as lack of passport, luggage and opportunity of advising people of my departure were brushed aside, and I realised at that moment how fortunate I was to have been dug out at 4 o'clock that morning after all.

The refuelling pontoon which was moored to the end of the port stub wing was cast off, the last motor-boat left the side of the ship, when a cry went up "Where is the coffee?" The tragic discovery having been made that two enormous thermos pails sent up to the R.A.F. mess to be filled with hot coffee were the only stores not safely on board.

Good use was made of a megaphone to communicate this disastrous information to the shore. Meanwhile, the engines were started up one by one. On the first engine being started the moorings were slipped, and the ship started to cruise slowly round in a small circle off the Air Station. Gradually more engines were started, and soon the ship was cruising at about eight to ten knots.

At this moment a small motor-boat dashed up bearing the thermos pails. A very sporting R.A.F. officer, holding a pail in each hand, leaped neatly on to the stub wing as the boat came alongside. Fraulein Strassmann seized the pails, obviously overjoyed at the recovery of these important items of the galley's equipment. The transhipment of the R.A.F. officer back to the motor-boat was most neatly and skilfully accomplished. The motor-boat approached the Do.X from the stern, and its prow mounted the rear edge of the stub wing while the officer leaped on board, and then, although there was considerable suction holding the boat, it was backed off.

All the engines were now running. We turned our nose down the Solent towards Cowes. As we came up to Cowes Point we turned round and faced towards Portsmouth, heading into wind. The engines were opened up, and within 56 sec. the 54½ tons of the Do.X were in the air and rights repidly.

and rising rapidly.

Almost immediately the engines were throttled, and the ship began to lose height, and one was convinced that a landing was going to be made, so close to the water did the ship appear to return, but in actual fact a height was set of ten metres, and at this height we went across the North Sea, for, as Capt. Christiansen said, what is the object of flying high—it only wastes power and fuel.

Thirty feet on an ordinary aircraft gives you an impression of being up in the air, but thirty feet in the Do.X makes you feel all the time that the next wave will gently

lap against the bottom of the boat.

The noise is terrific and conversation is difficult even in the luxurious saloons but there is no doubt it could be greatly reduced by the fitting of an exhaust system, for

twelve 600-h.p. engines kick up a fiendish row. Shortly after taking off, Capt. Christiansen came through the saloons and advised us that if we liked we could go up into the control or chart room. The noise up there makes conversation almost impossible except to the most hardened voyager, but Capt. Christiansen, the pilots, officers and crew were able to converse, although obviously with some difficulty. The rest of us had to be content with writing all our observations on scribbling pads.

The idea of a flying-boat with three decks is difficult to appreciate until you yourself climb the companionway to the control deck or watch one of the crew descend into the fuel deck to make his regular round of inspection.

There were five of us on the trip who could be classed as passengers:—Dr. and Mrs. Dornier, Fraulein Strassmann, Herr Ruhl, of the Deutsche Vacuum Oel, A.-G.

Hamburg, and myself.

Wandering about in the various saloons we were literally lost. Up in the chart room all the interesting things take place, but the passenger deck is frightfully uninteresting because, although one has all the room and comfort one wants, there is literally nothing to do.

Up in the chart room all the activity that is taking place can be observed. There is a large table and lockers containing the charts, and in spite of this table, which is about the size of an average small dining room table, there is ample room for at least eight people to lounge about comfortably and observe what is going on.

Forward of the chart room is the pilot's cabin.

is spacious and comfortable with a wonderful view and adequately provided with all the necessary instruments

for blind flying.

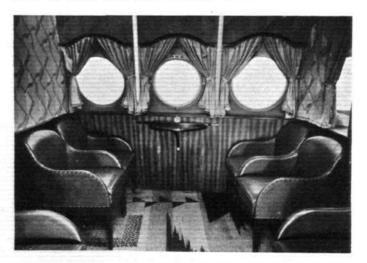
Behind the chart room is the engine control room which has the most complete and fascinating lay-out of engine controls, instruments and gauges which any man could wish to see, and which would gladden the heart of any marine engineer in its completeness and efficient lay-out.

Behind the engine control room is the wireless operator's cabin, and we all made good use of this by semessages, which were accepted at the ordinary rates.

I thought to gladden the heart of my board and make them feel that my presence in the Do.X. was worth while, so got Capt. Christiansen to send the following:

'Just off Dover. Splendid passage due to Mobiloil and fine weather.—Christiansen."

Capt. Christiansen is a splendid chief, obviously on the best of terms with all his officers and men, but at the same time, with all his good humour, keen and efficient. During the whole trip he never left the bridge or chart room for more than a few minutes at a time.



Few aircraft provide smoking facilities in as pleasant a manner as this.



This view shows how comfortably furnished are the dining saloons.

The navigating officer was extremely efficient. It was interesting to see how accurately we made our course to the settings he gave the pilots from time to time, in spite of the veering winds and unpleasant weather.

At one point we ran into a very heavy rain squall, which completely blotted out everything, but through all this the Do.X sailed on as calmly and as steadily as if in a dead calm, and I think it can be said to be literally true that had a glass of water been filled to the brim and left on a table in one of the saloons, it would have remained there without spilling a drop throughout this 8} hours' flight.

It was an object lesson to see quite large ships tossing about a few feet below us on a choppy North Sea, while

the Do.X sailed on in perfect steadiness.

Our cruising speed was usually 175 kilometres an hour (108.7 m.p.h.). The pilot's watch was exactly one hour on and one hour off, and during part of the flight Capt. Christiansen kindly let me occupy the second pilot's seat for over halt an hour.

As far as I could judge, the ship is easy to handle under all normal conditions, and the pilot's vision is good in all directions except straight back and directly overhead.

It is wonderful how hungry one gets in the air, and after we had been flying for a short while, or what seemed a short time, we were very grateful to take lunch served up to us by Fraulein Strassmann.

The captain and officers on duty had their lunch in the chart room and the crew in the engine room, but it was insisted that mere passengers should take theirs down in

one of the saloons.

When we reached Nordney the Captain gave instructions for us to circle the island, to the obvious delight of the We circled round once at a enthusiastic watchers below. height of about three or four hundred feet, and then resumed our course, followed by attendant aircraft who came up to greet us. They looked absurd flying alongside the Do.X—so small and insignificant.

On we went over Hamburg, where the traffic stopped and everybody seemed to come out into the street to wel-

come the ship as she passed overhead.

By this time we had risen to about 1,500 ft. and main-

tained this height all the way to Berlin.

It was absurd to see an enormous number of flocks of geese with their necks outstretched, running for dear life as fast as their web feet would carry them across the fields as the Do.X droned overhead. In each case the flocks were in almost perfect formation, and in field after field these flocks fled to the port and starboard.

A large number of farmers in Germany over whose land we flew must have somewhat disturbed recollections of the passing of the Do.X, as on several occasions I noticed horses and cows crashing through fences or jumping gates in their terror to get away from the noise of the Do.X. She has a very startling effect on animals, quite different from that of the average aircraft.

Presently a second meal was served, which I suppose would correspond to tea. There seemed something odd in being called down to meals at regular intervals—just another of those impressions which make you feel you are

back on board ship.

As Berlin came in sight there was great joy on board. Dr. Dornier came up to me and impressed upon me that I

was about to witness the termination of one of the most historic flights in aviation—I cordially agreed.

We discussed the future of the Do.X, and I was deeply interested in what he had to say about the possibilities ahead. It made one feel depressed that the call for economy had caused our Air Ministry to stop work on our own large flying boat.

We circled over Berlin, and I hope the terrific noise we made did not disturb the German legislators in the Reichstag! We then turned east towards the Müggelsee. Reichstag! Berlin was obviously overjoyed at the safe arrival of the Do.X, as witness the crowds and the stationary traffic.

As the Müggelsee came in sight one saw that the lake was divided down the centre by a long line of thick traffic and that one half of the lake was dotted all over with small craft of every conceivable shape, size and kind.

The long trim line was maintained by the police boats as they kept the other half of the lake free, on which the Do.X was to land. As we circled twice round this lake we noticed its banks were lined by thousands and thousands of people who had come to pay their respects to this great The air was full of and successful German enterprise. aeroplanes circling around us in welcome.

The engines were shut down, and we made a graceful

glide towards the surface of the lake. The landing was so perfect it was almost impossible to tell the actual moment of contact with the water.

The ship slowed down and went to her moorings, and the moment it had become stationary the vast Armada of boats broke the police cordon and surged round-a neverto-be-forgotten sight! Hooters blew, people cheered, and everybody was wildly enthusiastic, but so extraordinarily considerate and well behaved, all taking great care not to damage the Do.X.

Nobody was allowed on board until the police boat flying the quarantine flag had brought the doctor and Customs officer on board and the ship had been duly passed outyet a further marine touch. After that, the German Minister of Communications came on board officially to welcome the triumphant captain and crew, and congratulated Dr. Dornier.

It was a gorgeous evening, a fitting setting to a great undertaking. The enthusiasm of the Armada prevented the official launches coming alongside, and it was over an hour before we could disembark.

As we were driven into Berlin we met hundreds of cars streaming out, full of eager people going to pay their respects to this wonder ship.

12 10

AN INTERNATIONAL FLYING SCHOOL

LL over the world the standard of flying training provided both in the R.A.F. and the British civilian school is taken as the highest which can be obtained. It is not surprising, therefore, that pupils come to this country from every part of the globe. The Air Service Training School at Hamble was opened, as our readers will know, on June 25, 1931, by the Duke of Gloucester, and since that time officers and civilians from each of the following countries have taken courses in one or other of the branches of flying:—Canada, New Zealand, Australia, India, America, France, Germany, Switzerland, Denmark, Norway, Finland, Greece, Siam and China, besides those from Great Britain. The syllabus of courses provided has recently been revised, the full details of which are contained in a new booklet issued by the school, and copies of this may be obtained by bona fide inquirers who write mentioning Flight to A.S.T., Ltd., Hamble.

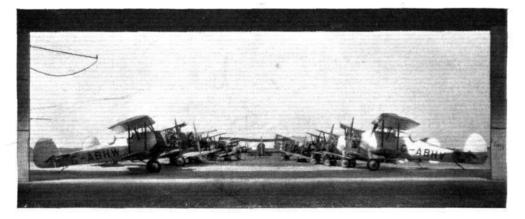
One of the most interesting of these courses is that which has been designed for pupils who wish to take up aviation as a profession. It is now recognised that the possession of a "B" licence is not an adequate qualification for those who would make aviation their life's work, and this course ensures that the pupil will have a thorough understanding of engineering as applied to aviation; he will be able to obtain his "A," "C" and "X" Ground Engineers' Licences; he will be eligible for the second-class navigators' certificate; he will have passed through an instrument flying course, and, of course, have obtained both his "A" and "B" pilots' licences. During the 2 to $3\frac{1}{2}$ years which the course takes, the pupil will have some 300 hr. flying experience. Concurrent with the flying training, ground instruction is given in navigation;

meteorology; signalling; international air legislation; airmanship; theory of flight; engineering; rigging, construction, care and maintenance of instruments; packing, care and maintenance of parachutes; besides which facilities are provided at the school for learning foreign languages. From this one example it will be seen just how thorough the training at Hamble is, and it is not surprising, therefore, to hear that the greatly increased number of pupils has made it necessary to increase the number of aircraft employed. This has been done by the acquisition of two Avro "Cadets" with 7-cylinder "Genet" engines. "B" licensed pilots receive examination in their technical subjects at Hamble, and recently six pupils qualified for the "X" ground engineers' licence for care, maintenance and packing of parachutes.

licence for care, maintenance and packing of parachutes.

An interesting development at the school is a system which has been evolved for giving pupils instruction in instrument flying while still on the ground. This has been done by arranging a roomy cockpit with dual controls in tandem and a complete range of flying instruments on the dashboard. For the purposes of instruction the pupil sits in front with the instructor behind. The needles of all the instruments are so arranged that they operate in accord with the movements of the controls, but they can all be overridden by the instructor. This means that no matter what the pupil does with the controls the effect which his movements would have had on a normal aircraft is shown immediately on his instruments, and even such things as the acceleration and pitch effects on the compass when on easterly or westerly courses is apparent. For the purpose of the instrument, flying course experience with this apparatus will be looked upon as an extra, and the total time in the air will not be decreased because

The last time we were down at Hamble we noticed the new squash court, which is very well patronised. The engine lecture room has been stocked with even more sectioned specimens of engines, and in the aircraft lecture room more modern models are being used. The policy of the school is to raise the standard of aviation generally by affording a training in flying and ground subjects on similar lines to those employed in the R.A.F., and there would certainly seem to be every reason for this policy proving a success.



A view out of the hangar at Hamble, showing the "Avians," "Cadets," "Atlases" and "Siskins" used by A.S.T.

rivate Fluing & Clidin

ANWORTH Joyriding and taxi work have benefitted greatly from the recent spell of fine weather. On Sunday, July 10, when the Graf Zeppelin paid her visit, over 700 passengers were taken up for short flights. A recent addition to the instructors' staff is Mr. R. Coupland. On Tuesday, July 5, Hanworth Club defeated the Berks, Bucks and Oxon Club in a return match for the "Hart" landing competition. They are now due to meet Northampton. On Saturday four machines flew over the British Legion Rally at Guildford to salute the Prince of Wales, the pilots being Flt. Lt. M. Findlay, Mr. A. Carroll, Capt. Lessel Hutcheon and Capt. Stewart Knock. On Sunday Marie Tempest, accom-Lessel Hutcheon and panied by her husband, celebrated her 68th birthday by making her first flight.

On July 31 there will be a Garden Party at Hanworth held by the Hounslow, Heston and District branch of the Comrades of the Royal Air Forces. Tickets, price 5s. each, which will include a flight, tea and dancing, may be obtained from the Secretary, C.R.A.F., Osterley Hotel, Osterley, Middlesex. During the afternoon there will be a flying display and the whole of the grounds, hangars and workshops will be open for inspection. The party will

start at 2.30 p.m.

BROOKLANDS Although the routine of the school was interrupted by the King's Cup Race during the whole of both Friday and Saturday, the number of flying hours still continues to follow the mercury in the thermometer, i.e., when one goes up the other goes up, and over 50 hr. were logged during the last week. Messrs. Walter and Heaton have both gone solo and 11 pupils are being instructed in instrument flying. In order to encourage further pupils to this branch of training, a free course will be given as a prize for a competition. Each entrant will be given 15 min. instruction "under the hood" free of charge, and a number of the best will then be asked to take another hour's instruction each. Of this number the another hour's instruction each. Of this number the school instructors will select the best competitor, who will be given the full Instrument Flying Course without further cost to himself. This contest is open to any private owner. Arrangements have now been made with the Cierva Autogiro Co. whereby training may be obtained on "Autogiros" at Brooklands. Capt. Mestinger, well known to those pilots who have visited Vienna, has joined the school and is taking his first lessons. On Saturday, July 2, there was a Motor Gala at Brooklands in aid of Capt's Hospital, and during the carly evening the Capt Guy's Hospital, and during the early evening the Graf

Zeppelin flew over and dropped a bouquet which was presented to the Duchess of York, who had visited the Gala during the afternoon. The occasion was a triumph for M.G. cars, a type which is so widely used by people in aviation owing to its snappy and fascinating performance. Mr. R. G. Nash won the premier award for closed cars in the Concours d'Elegance with his M.G. "Magna." Miss K. Brunnell, with her "Magna" four-seater. won her class in the "Hazard Driving Contest." In the speed events Mr. D. Hanky, in his M.G. "Midget," secured third place in both the Guy's, Senior and Junior handicap races, while the Hon. Adam Chetwynd with a Montlhery model "Midget" was second in the long-distance handicap. Incidentally, M.Gs. had great successes at the recent Bristol Concours d'Elegance, where Miss Peggy Avery was first in her class for open cars with an M.G. "Midget" and Mr. W. E. Watkinson first in the sports car section with his "Magna" fourseater.

NEWCASTLE-UPON-TYNE

Entry forms for the London-Newcastle Air Race which will take place on August 6, can be obtained from the Hon. Secretary, Newcastle-upon-Tyne Aero Club, Cramlington Aerodrome, Northumberland. The race will start from Brooklands at about 12.30 p.m. and is timed to finish at Cramlington at about 3 p.m. For those who are attending the meeting, but not taking part in the race, lunch may be obtained either at Cramlington or at the Newton House Hotel, Londonderry, Leeming, Yorkshire. This hotel has a landing ground, particulars of which can be obtained from the A.A. The race, for which the first prize will be £60, the second £20, and the third £10, with £10 for the fastest time, is open to all makes and types of aircraft not exceeding 1,500 lb. unladen weight and will be flown on handicap. After leaving Brooklands, competitors will have to pass over Sherburn Aerodrome at between 200 and 400 ft. altitude so that their numbers may be taken. They will not be required to land and no allowance will be made in the handicaps for intermediate stops. At the same meeting there will also be a Cramlington race which will start and finish at Cramlington, and will consist of three laps of a triangular course, the total distance being approximately 25 miles.

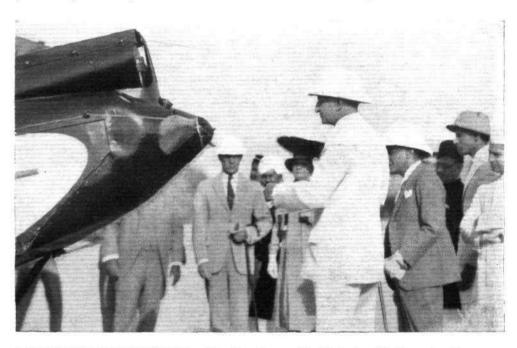
AT ROMFORD A Hillmans will be giving an air display at the Gallows Corner Aerodrome, near Brentwood, on Saturday, September 24. Communications regarding their display should be sent to Mr. W. Courtenay, 8, New Court, Lincoln's Inn, W.C.2.

MORE D.H. SUCCESSES

At the Clermond Ferrand Rally in France, which is considered to be a very important event, the first and second prizes were won by M. Nicolesco and M. Boris. Both these gentlemen were flying "Puss Moths" (Gipsy III) and covered 1,600 km. (995 miles) in 8 hr. As both pilots are genuine private owners this is most certainly a very meritorious performance.

IRISH AERO CLUB

Miss Amy Johnson and Mr. Mollison visited the Irish Aero Club on the occasion of their second "At Home" of the season and presented the prizes. Mr. A. D. Reid won the Gleeson Cup for "Balloon Bursting" and Mr. J. B. Rodgers got first prize for "Bombing the Baby."
During the afternoon the three Club "Moths" put in 13 hr. flying between them. The number of spectators at the Baldonnel Aerodrome was considerable and enthusiastic.



A "MOTH" IN LUCKNOW: His Excellency Sir Malcolm Hailey, the Governor of the United Provinces, naming a "Moth" presented to the Delhi and U.P. Flying Club, Lucknow Centre, by the Raja of Nanpara.

russ? Igogg

CROYDON

LL machines, both inward and outward bound, owing to the glorious weather, were fully loaded last week, and in many instances services were

run in duplicate and sometimes triplicate.

The visit of the Luft Hansa G.38 proved a great attraction, and souvenir flights were given by the company to many people and staffs on the aerodrome. One flight was The G.38 went out to meet the Graf the envy of many. Zeppelin, and escorted it to Hanworth, giving the passengers views of the airship from varying angles. In the hands of Pilot Brauer, who has had long experience on the G.38, it manœuvres very well. The rear cabins are extremely quiet to travel in, and the forward cabins reasonably quiet. The take-off of this machine has been im-

On Monday, four Avro "Tutors," purchased by the Estonian Government, left, in formation, for Rheims.

The G.38 left for Berlin, returning on Tuesday, and then back to Berlin again on Wednesday.

On the same day, Miss Gertrude Lawrence arrived from the Riviera to fulfil her B.B.C. engagements. Tuesday might well be called a tennis day, as Mlle. Suzanne Lenglen, Cochet, and four or five other famous French tennis stars returned to Paris by Air Union.

Lord and Lady Louis Mountbatten also arrived from

Paris by Air Union.

A Stinson monoplane belonging to the Vacuum Oil Co. arrived from Paris on Thursday. The Americans like to

decorate their aircraft to look like eagles. This machine is painted to represent one, the wheel spats being made to look like the claws of the bird. Several American aircraft that have visited Croydon at different times have been thus

The Polytechnic bookings were so heavy for Saturday that Imperial Airways had to run two machines through to Basle, both aircraft being full to capacity.

The 9.30 a.m. K.L.M. service to Amsterdam on Saturday included among its passengers the Earl and Countess of Athlone. Lord Londonderry and Sir John Simon arrived back from Geneva by Imperial Airways on Monday morn-

We are seeing quite a lot of Mr. Edgar Percival and his "Gull," and at Croydon we all rather fancied his chance

of winning the King's Cup. However, we all congratulate our old friend, Capt. Hope, on his success.

The veteran "Fokker Universal," G-EBUT, is on active work here. This machine has toured Kenya and Africa and places too numerous to mention, when she was owned by Lord Carberry. I believe the machine is now owned by that Australian sportsman, Doug. Shepherd, who proposes to fly her out to Australia early in the New Year. She looks like working hard to the end of her days, judging by the amount she is still doing.

Traffic figures for the week were:—Passengers, 2,098; freight, 79 tons.

FROM HESTON

ONDAY, July 4.—An example of the trouble caused by airmen travelling to or from the Continent who have a forced landing and do not report the fact immediately to the authorities, was the case Arthur Allan and Mr. H. C. Smith, who, flying in G-ABOV ("Moth") were reported as proceeding from Paris to Heston on Sunday evening. As they did not arrive at the expected hour, Croydon was informed. Paris, in turn, was communicated with by Croydon, and very late in the evening it was discovered they had turned back and landed on the beach at Calais, where they were entertained Incidentally, the Dover lifeboat was sent for them. They arrived quite safely at by the Mayor. Incidentall out to search for them. Heston on Monday morning full of praise for the kindness of the Mayor of Calais, who had put a night guard over their machine, but certainly not realising the trouble and expense they had caused. Capt. W. Ledlie, of Personal expense they had caused. Capt. W. Ledlie, of Personal Flying Services, Ltd., arrived from the new aerodrome at Finglas, Dublin, with three passengers in the "Junkers" G-ABDC. He reported big business in joyriding by the many Irishmen attending the Eucharistic Congress.

Tuesday.—Two "Puss Moths" of Banco left with four passengers for Rotterdam, among them being Brig. Gen. A. C. Critchley and Mr. W. W. Wakefield, the English Rugger Captain. Both machines returned during the afternoon. Capt. Cayalet arrived from Weyford in his

Capt. Cazalet arrived from Wexford in his Moth." Mr. Kirsch left for Aachen in a "and Mr. Meny in a "Puss Moth" for St. Mr. S. C. Thorpe, a young mechanic of Henlys, afternoon. " Puss Moth." " Klemm " Ingelvert. Ltd., made his first solo flight after a very short period of

instruction.

Wednesday.—Banco's "Puss Moth" was chartered by the Marquis of Clydesdale and Mr. Roger Thorneycroft to proceed to Renfrew to inspect the racing boat Miss England III. Miss Sheila MacDonald, the Prime Minister's daughter, was taken for a flight during the evening.

Thursday.—There were two first soloists among the pupils to-day, those realising their ambition being Mrs. Monica Fitzclarence and Mr. R. L. Malone. Miss Phylis

Dare enjoyed a flight on one of the School machines, piloted by Capt. Ferguson. We were pleased to welcome Mr. Armstrong, of Iona National Airways, Ltd., Finglas, who arrived from Ireland in EI-AAG.

Friday.—The "Limited Service" to Le Touquet was inaugurated to-day, Capt. C. D. Barnard taking among his passengers Capt. Arthur and Mrs. Stanley and Maj. and Mrs. Borsen. The Spider has been fitted with a bar and a steward is carried on each trip to attend to the wants of the passengers. Col. the Viscount Gort, V.C., etc., qualified for his "A" licence to-day. Miss V. B. Thompson, another pupil of Airwork, successfully accomplished her first solo flight to-day.

Saturday.—Mr. and Mrs. Marshall left for Paris in a "Puss Moth," and Dr. Thierry and Dr. Bonnikson in a "Moth" for Rotterdam. Banco's "Puss Moth" left for Le Havre with one passenger, returning later in the day, and their other one, after doing a long flight over London in the morning, proceeded to Wimborne, Dorset, in the afternoon with one passenger. The machine acquired by the Brigade of Guards Flying Club—G-AALK ("Gipsy I Moth ")—looked very smart in its new colouring. It was formerly the property of Capt. the Hon. F. E. Guest. It is fitted with an Airwork Mark III windscreen.

Sunday .- Mr. Gordon Selfridge, Jnr., brought a party of prospective pupils to Heston to-day, seven of them taking trial lessons. Flt. Lt. N. Comper gave a splendid exhibition of flying on the Prince of Wales' Comper "Swift." Lord Elgin was an interested visitor to Heston, making a very thorough tour of the Airport. He is flirting with the idea of opening an aerodrome in Scotland, modelled on the Heston lines. Customs had another busy day; one machine was waiting the arrival of the Customs officer to be off. Clearances were:—Mr. Harbin and passenger, "Puss Moth," from Paris; Flt. Lt. P. G. Lucas, "Hawker Hart," from Rotterdam after an extended Continental tour. Banco sent "Puss Moths" to Le Havre and Berck.

pisms from the Four Wind

The King on the "Courageous"

During his inspection of the Fleet at Weymouth, H.M. the King went on board the aircraft carrier Courageous on Tuesday, July 12, accompanied by T.R.H. the Prince of Wales and Prince George, who had flown down to Portsmouth previously. The carrier then put to sea, and flying displays were given by the flights on board that ship and by those on H.M.S. Furious. The aircraft bombed the Courageous with flour bags, attacked targets towed by destroyers, and finally launched torpedoes against the *Courageous*. At the close of the flying display a message was wirelessed to all ships "Stand by to receive a message from the King." The Prince of Wales was flown off the deck in the cockpit of a Fairey 3.F, followed When overhead, the Prince by Prince George in another. of Wales, in the name of the King, broadcast the following message: "It gave me great pleasure to inspect the ships' companies I saw aboard the Fleet Flagship this morning. I am now enjoying watching the operations of the aircraft After flying over the whole fleet, the two Princes landed again on the deck of the Courageous.

World Flight Hold Up THE two American airmen, Bennett Griffin and James Mattern, who, as reported last week, set out from New York on July 5 on a flight round the world in a Lockheed "Vega," have met with early misfortune. Having successfully crossed the Atlantic-they left Harbour Grace at 9.59 p.m. G.M.T. and landed at Berlin at 4.42 p.m. on July 6-in 18 hr. 43 min., a record crossing, they resumed their journey after a short rest and proceeded They were long overdue at Moscow, however, and at first some fears were felt for their safety, until on July 8 it was reported that they had made a forced landing in a bog at Borrisov, near Minsk. The machine was wrecked and both were slightly injured. They went on to Moscow by train, and considered plans for another attempt

next year!

Mollison's Atlantic Flight Preparations

ACCOMPANIED by his fiancee, Miss Amy Johnson, Mr. James Allan Mollison flew from Stag Lane to Baldonnel, Co. Dublin, on July 8, to confer with Capt. J. P. Saul (navigator of the monoplane Southern Cross on the transatlantic flight of 1930), on the course he should follow when he attempts to fly to New York and back in two and a-half days next month. Mr. Mollison told our Irish representative that he would follow the Great Circle course as far as possible and would probably land at Harbour Grace, Newfoundland. Next day Mr. Mollison, with Miss Johnson and Capt. Saul as passengers, flew to Portmarnock Strand in north County Dublin. After spending some time in inspecting the beach, Mr. Mollison said

that it was ideal for the taking off of a heavily laden machine. "The surface is as hard as concrete, the approaches are perfectly clear and the prevailing south-westerly wind blows straight down the beach," he remarked, "I shall certainly take off from here on my Atlantic flight." It is understood that Mr. Mollison intends to use a "Puss Moth" aeroplane fitted with tank-age for 175 gallons of petrol. He will leave Portmarnock about the middle of August during the full moon period. He estimates that he will require a run of three-quarters of a mile to get his machine off the ground.

Capt. Stack Home CAPT. N. STACK, who flew to India to demonstrate the Spartan "Mailplane," has been hurrying back to England in order to take part in the King's Cup Air Race. He met with several delays, however, and was unable to get back He arrived in Blackpool on July 10.

Madrid-Philippines Flight

Don Fernando Rein, a Spanish pilot, has completed flight from Madrid to the Philippines in a Spanish machine fitted with a British engine. He left Madrid last April and flew via North Africa, Iraq, India, Burmah, Siam, Indo-China and Hong Kong.

Prince Michael of Roumania Learning to Fly

PRINCE MICHAEL, heir to the Roumanian throne, who is 11 years of age, is learning to fly under the instruction of the Roumanian pilot Opris, on a machine owned by his uncle, Prince Nicholas.

M. Bata Killed

M. THOMAS BATA, the Czechoslovak millionaire shoe manufacturer, who has made considerable use of aircraft in connection with his business, was killed on July 12, together with his pilot, M. Broucek, when his machine crashed near Zlin on starting out for a business flight.

National Aviation Day Displays

DISPLAYS in connection with Sir Alan Cobham's National Aviation Day Campaign will be held as follow:— July 16, Bletchley, Fountain Hotel Aerodrome, Loughton. July 17, Coventry, Whitley Abbey Aerodrome. July 18, Market Harborough, Cote Hill Aerodrome, Husbands Bosworth. July 19, Peterborough, Castor Hill. July 20, Hunstanton, Church Farm, Ringstead Road, Heacham. July 21, Thetford, Lodge Farm, Croxton Road, July 22, Cromer, Laurel Farm, North Repps. July 23. Norwich, Mousehold Aerodrome. July 24, Great Yarmouth, Wheatcroft Farm, Gorleston. July 25, Ipswich, Municipal Airport, Nacton Road. July 26, Clacton-on-Sea, The Flying Ground, Alton Park Road. July 27, Merstham, Alderstead Farm. July 28, Heston, Heston Airport. July 29, Herne Bay, Parsonage Farm, Margate Road, Broomfield. July 30, Deal, Coldblow Farm, Walmer Road.



A formation flight over Stag Lane in "Moths" of the London Aeroplane Club by members of the British Aviation Insurance Co. The pilots are (left to right) G. Store (Techare (left to right) G. Store (Technical Agent in Cape Town), A. Goodfellow (Legal Dept.), A. G. Lamplugh (Underwriter and Principal Surveyor), A. G. Hayward (Continental Manager), W. R. Massey (Claims Dept.). (FLIGHT Photos.)

ohe Industr

THE A.A. WIRELESS STATION AT HESTON

T is perhaps not widely known how successful has been the Automobile Association's scheme for a daily broadcast of comprehensive weather reports from the wireless station established by them at Heston Air Park and equipped by Standard Telephone & Cables, Ltd. Begun as an experiment in September, 1931, it proved itself immediately one of the best services inaugurated to assist airmen flying in this country. It has further conclusively shown that if only two more stations like it were erected, say, one at Leeds and the other at Bristol, no airman flying in Great Britain and equipped with wireless apparatus would be out of range of the regular weather reports.

The cost of running such a station and service per year is so small that, coupled with the supreme importance of weather broadcasts to airmen, there should be no delay in establishing two more. Possibly the flying clubs, which have been prompt to intercept the daily Heston broadcasts, and to which an extension of the service would be a blessing, would find it feasible even with their meagre resources to make a collective contribution towards the establishment of two more stations. We say this knowing how low is the yearly maintenance cost involved per station. The licence held by the A.A. station at Heston is for aviation purposes only, and the service put forth is primarily intended for airmen. But the truth is that there is no limit to the sections of the community which have found the daily service of great practical advantage. A stream of correspondence received at Heston testifies to the intelligent application by the public of information about the weather when transmitted in a medium that all understand, namely, the human voice. Appropriately enough, motorists by the hundred have got into the habit of employing the aid of Heston before setting forth on a long journey. Farmers in all parts have come to accept Heston as their barometer.

Nominally Heston is a 4-kilowatt station. Actually it is less than that, 330 watts being the energy employed for telephony, yet it is picked up all over the country. Newcastle and Dublin receive the broadcasts nine times a day. Transmission is on a wavelength of 833 m. If listeners tune in a little below Croydon (900 m.) Heston should be picked up as a matter of course. The range of radio telephony transmitted by Heston is up to 400 miles for ground stations. In the air an airman using the "Standard" aeroplane receiver unit MS 3044 (described in FLIGHT for January 8, 1932) can receive pure speech from Heston for a distance of 100 miles. This complete receiver unit, by the way, only costs £30. The station is also equipped for continuous wave and interrupted continuous wave transmission, the range in this case being between 500 and 800 miles. Thus Heston is always prepared to take over a telegraphic service if needs be.

The station is a small but selfcontained unit occupying a central position on the main approach to the Air Park buildings, designed to harmonise with the distinctive style of the architecture of Heston. For its particular function it is considered the only one of its kind in the world, and as such it is a technical achievement as well as an advanced feature in the scheme of civil aviation. The building is compact and surrounded by neat grass borders, while towering to a height of 75 ft. is a lattice mast supporting a T-aerial facing north and south.

There are three departments in the First comes the operating station. room, with a section as a public inquiry office, then adjoining that is the power room, and finally a neat administrative office for the wireless officerin-charge. The latter is F/O. T. Herbert, who has been connected with the wireless industry more or less continucusly since 1910. He has organised Heston on Service lines, which is one cause of its success. Assistant wire-less officer is Mr. G. R. Mack, and an efficient lady secretary completes the staff.

seven-day-per-week A weather broadcasts is maintained all the year round. All the reports broad-cast are official Air Ministry reports intercepted by Heston in Morse and de-coded by the staff for broadcast in The service maintained telephony. imposes no expense upon those whom It may be picked up by it benefits. all and sundry and used as desired. Incidentally, since the scheme was started many people who were in the habit of going to the expense of telephoning the Air Ministry for weather information have ceased to do so, Heston automatically serving their needs, thus also sparing the Air Ministry a good deal of trouble. The times of the A.A. broadcasts

are at thirty minutes past each hour, each day's programme including three forecasts. This programme is as follows:-

9.30 hrs. (B.S.T.).-Full synoptic weather report and forecast for the day.

10.30 hrs.-Repeated synoptic report and latest report for S.E. England.

11.30 hrs.—South-east route, includes any supplementary stations.

12.30 hrs.—Selected observations for England.

13.30 hrs.-Forecast until dusk.

15.30 hrs.—Full Synoptic report. 16.30 hrs.—Repeat F.S.R., also south-east route.

17.30 hrs.-Forecast for the following day.

18.30 hrs.—Selected observations for England.



The A.A. Wireless Station at Heston, (FLIGHT Photo.)

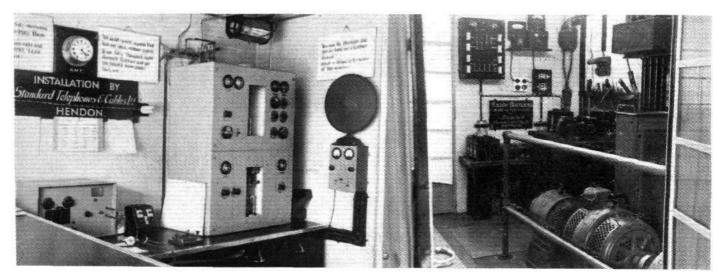
Antwerp is amongst the Continental stations that take advantage of this service for the guidance of airmen leaving for Great Britain.

Reverting to the "Standard" wire-

less apparatus (as the wireless equipment of Standard Telephones & Cables, Ltd., is designated installed at Heston, our illustrations give a good impression of the simplification that The large set on marks the design. the table is the main transmitter unit, designed for both telephonic and telegraphic transmission. On the wall to the right is the remote control unit, with voltage controls, metres and buttons. By the simple act of pressing a button on the face of this unit the generators in the adjoining powerhouse are started. The loud speaker perched on this unit is for use as an alternative to the headphones-seen on the table—when the Air Ministry weather reports are being intercepted by the operator.

Above the main transmitter unit (which comprises oscillator and amplifying panels) is a simple automatic changeover device in the aerial circuit for changing over from transmission to reception with instantaneous effect. This feature renders the apparatus practicable for intermediate airports where operators would have to alternate quickly between reception and transmission. Municipal airports, too, would find this apparatus ideal for their purpose, particularly in connection with economical operation. The receiver is seen on the extreme left, whilst the small black unit between it and the transmitter is the operating control panel providing two-way operation. The two Morse keys are for telegraphic transmission on continuous wave or interrupted continuous wave. The Morse can be transmitted over a range of five tones, different valves being employed for different tones.

Passing next to the power-house, where a 3-phase supply is used, there are the generating sets providing H.T. of 1,500 volts, L.T. of 15 volts, and grid bias 120 volts. Three coloured lamps on the panel in this power-house



A.A. WIRELESS STATION, HESTON: On the left is the operating room, and on the right the control room. (FLIGHT Photos.)

are in view from the operating room as a signal to assure the operator when he is about to press the buttons on the remote control unit to switch on the generators.

Before we conclude our description of this interesting section of Heston Air Park we must mention that visitors (especially members of the Automobile Association) are always welcome to inspect the wireless station, and we would draw the attention of flying men to the simplified weather map in the inquiry office which has been ingeniously devised by F/O. T. Herbert. It consists of a coloured map of Great Britain on the face of a box frame, with 40 important towns indicated thereon and the main flying routes that they symbolise.

At the point representing each town the map is perforated. Projecting from the sides of the map are thin strips of lath made to slide behind the perforations, the projecting ends being labelled with the names of the towns. Stuck on the other ends of the laths where they slide behind the perforations are small pieces of coloured gelatine, the colours being red, green and amber. "The familiar traffic signals," murmur our readers. Exactly. That is why the three particular colours are chosen. Everyone is familiar with them.

Everyone is familiar with them.

Now for this purpose red means "adverse flying conditions," green means "flying conditions," and amber means "flying conditions but risky—see reports." In other words, the airman who reads this map before setting out on his flight knows that red advises him to "stop," green says "go," and amber implores caution, meaning that the detailed weather reports should be studied and he should judge whether conditions were negotiable. To set the map according to the weather reports received it is merely necessary to slide the appropriate colours in the perforations where the towns are indicated.

As 99 per cent. of the pilots leaving Heston call in the A.A. station for a weather report first, this map enables them to obtain the required information without bothering the staff, while the signals employed are considered to be more readily understood than the usual group of coloured squares which involve memorising their meaning.

Readers who would like fuller de-

tails of the A.A. broadcasting programme in a handy form should purchase Air Ministry Notice to Airmen, Series A, No. 42, of 1932.

SOLDERING ALUMINIUM

A N aluminium and all-metal solder, called "Alumaweld," which it is claimed will repair aluminium, cast iron, steel and any other metal or alloy has been produced by the Allied Research Laboratories of Glendale, California, U.S.A. "Alumaweld" is applied at a temperature of 370 deg. F. with an ordinary soldering iron or blow-lamp. It is said to be many times stronger than ordinary solder, and has a tensile strength of 12,000 lb. to the sq. in. It machines easily, is ductile, and will take a polish over which chromium, nickel and any other kind of plating may be applied.

AVIATION PUBLICITY

THE name of F. H. Jones is perhaps one of the best known in this country in connection with aviation publicity. For the last twelve years Mr. Jones has been publicity manager to the Napier Co. and during that time he has been responsible for Press arrangements on many important occasions. For example, in 1925 he visited America as Press Representative for the British Schneider Trophy team, while in 1927, in connection with the same Contest, he went to Venice as Special Press Correspondent. In 1929 he was on the Press Committee of the Royal Aero Club in connection with the Schneider Contest, and for the last three years has been Press Steward for the Royal Aero Club at the King's Cup and other important races. Mr. Jones having now relinquished his post with the Napier Co., has opened an office at 177, Fleet Street, London, E.C.4 (Central 8488), and would be glad to act for any firm who require the part-time services of an experienced man, very well known in Fleet Street, who is therefore in constant touch with the Press.

WIRELESS INSTALLATIONS

THE Asiatic-Petroleum Co. have ordered a Marconi 75-watt "Light Plane" aircraft telephone set,

type A.D. 22 (described in FLIGHT, April 1, 1932), for installation in one of their "Puss Moths" used for the purpose of increasing the speed and mobility of their huge selling organisation. This particular example envisages the super-salesman of the future (though he will not be regarded as such then) flying from territory to territory and gathering advance information by wireless. The Marconi A.D.22B set incorporates a transmitter as well as a receiver, so that the airman salesman can obtain direct information from ground stations to assist him on his "rounds" when the regular weather broadcasts do not quite meet his needs.

In normal atmospheric conditions, and with a machine of the light-plane class, the range from "aircraft to ground" of this set is between 50 and 75 miles for communication to the ordinary aerodrome ground stations in Europe. When the more efficient stations are installed, ranges up to and exceeding 100 miles will be obtainable.

A Marconi type A.D.18 aircraft receiver and transmitter has also been installed in the Junkers "J.U.52" that has been specially modified to conform to the conditions of a "luxurious air yacht" for Prince Bibescu of Roumania, President of the International Aeronautical Federation. The transmitter incorporates an indepen-dent drive circuit, and has a wave range of 300 to 1,600 metres, with a power input of 350 watts. It is suitable for telephony, continuous wave and interrupted continuous wave tele-graphy. The receiver embodies features designed to give great selectivity combined with simplicity of tuning and adjustment. The entire apparatus is very compact, the transmitter dimensions being 18 in. by 18 in. by 9 in. and receiver 7 in. by 18 in. by 9 in. Prince Bibescu's machine, incidentally, has the rear half of the main cabin converted into a private room and study, containing two beds, wardrobes and collapsible table. Sleeping quarters for the Prince's suite are in the front of the cabin.

As the President of the F.A.I., he has endeavoured to introduce an international flavour in his German machine by using French engines and British wireless equipment, while his pilot is a Roumanian.

THE ROYAL AIR FORCE

London Gazette, July 5, 1932

General Duties Branch

Pilot Officer on probation T. King is confirmed in rank and promoted to rank of Flying Officer (June 5); F./O. L. E. Dowse is promoted to rank of Flt.-Lt. (June 30).

The following Pilot Officers are promoted to rank of Flying Officer:— J. G. Younghusband (June 10); H. L. Andrews (June 12); R. C. Gaskell (June 20); J. R. Wemyss (July 5).

(June 20); J. R. Wemyss (July 5).

Wing Com. R. M. Bayley, D.F.C., is placed on half-pay list, Scale A, from June 18 to June 24 inclusive; Wing Com. R. M. Bayley, D.F.C., is seconded for duty as Air Adviser to the Greek Government and is granted acting rank of Group Capt. whilst so employed (June 25); Lt.-Com. S. T. Morgan, O.B.E., R.N., Flt.-Lt. R.A.F., ceases to be attached to R.A.F. on return to Naval duty (June 29); Group Capt. E. R. C. Nansom, C.B.E., D.S.C., A.F.C., is placed on retired list at his own request (July 4). The following are placed on retired list (June 20):—Flt.-Lt. C. W. Booth, M.B.E.; Flt.-Lt. M. C. Head; Flt.-Lt. G. Lambourne, F., O. J. Wesley.

The following Flying Officers are transferred to Reserve, Class A:—H.D. Mitchelmore (June 30); T. J. Davidson, D. G. P. Fitzpatrick, M. G. R. Harris, T. L. Harrison, L. W. W. Modley, A. L. T. Naish (July 1). F. O. F. G. Ferrier is transferred to Reserve, Class C (July 1); F. O. M. G. C. Chadwick resigns his short service commn. (June 29); F. O. H. W. Duffey relinquishes his short service commn. on account of ill-health (July 1).

Medical Branch

Flt.-Lt. (Honorary Wing Com.) (acting Wing Com.) J. N. MacDonade' M.R.C.S., L.R.C.P., relinquishes his temp. commn. on completion of service and is permitted to retain honorary rank of Wing Commander (July 1).

ROYAL AIR FORCE RESERVE. RESERVE OF AIR FORCE OFFICERS

RESERVE OF AIR FORCE OFFICERS

General Duties Branch

Lieut. S. G. Long, R.N. (Emergency List), is granted a commn. in Class A, as a Flying Officer (June 15); R. S. Jukes is granted a commn. in Class AA (ii), as a Pilot Officer on probation (June 20). The following Flying Officers are transferred from Class A to Class C.—J. T. Hall (Nov. 21, 1931); H. Sanders (May 22); A. M. Verity (April 20).

The following Flying Officers relinquish their commns. on completion of service:—C. R. Troup (May 7); R. Bance, A.F.M. (June 28); J. S. Dick (June 30); A. I. Riley, A.F.C. (July 3). P./O. J. M. Wells resigns his commn. on appointment to the Auxiliary Air Force (June 11).

SPECIAL RESERVE

General Duties Branch
The following are granted commissions as Pilot Officers on probation (June 4):—P. S. Rook, W. B. Royce. Pilot Officer (Hon. F./O.) C. N. Shaw is promoted to the rank of Flying Officer (June 17).

AUXILIARY AIR FORCE

General Duties Branch

No. 600 (CITY OF LONDON) (BOMBER) SQUADRON.—J. M. Wells is granted a commm. as Pilot Officer on resigning his commm. in Reserve of Air Force Officers (June II).

No. 600 (COUNTY OF LONDON) (BOMBER) SQUADRON.—F./O. B. S. Thynne is promoted to rank of Flt.-Lt. (May 30).

Accountant Branch
No. 602 (City of Glasgow) (Bomber) Squadron.—P./O. J. O. Buchanan is promoted to rank of Flying Officer (April 1)
No. 608 (North Ridding) (Bomber) Squadron.—P./O. W. I. Hodson, M.C., is promoted to rank of Flying Officer (June 23).

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified.

notified.

General Duties Branch

Wing Commander R. M. Bayley, D.F.C., to Special Duty List, 25.6.32, whilst seconded for duty as Air Adviser to the Greek Government.

Flight Lieutenants: G. R. Ashton, to School of Photography, S. Farnborough; 1.5.32. R. V. M. Odbert, to H.Q., Air Defence of Gt. Britain, Uxbridge; 26.6.32. J. W. Rose, D.S.M., to Air Ministry Wireless Section; 1.7.32.

Flying Officers: G. A. E. Harkness, to R.A.F. Record Office, Ruislip 27.6.32. J. S. Hindmarsh, to No. 4 (A.C.) Sqdn., S. Farnborough; 28.6.32 J. A. H. Louden, to School of Naval Co-operation, Lee-on-Solent; 1.7.32.

Medical Branch
Flight Lieutenant G. W. Paton, to No. 5 Flying Training School, Sealand;

Flying Officer: C. H. Smith, to H.Q., Inland Area, Stanmore; 24.6.32. J. F. Dales, to Medical Training Depot, Halton, 27.6.32, for an initial course of instruction on appointment to a Short-Service Commu.

NAVAL APPOINTMENTS

The following appointments have been made by the Admiralty:-Lieut. (F/O., R.A.F.).-J. H. Charsley, to Suffolk, and for 403 Flight.

Lieuts.—B. H. M. Kendall (F/O., R.A.F.), to Victory, for R.A.F. Base, Gosport, for course (June 30); and G. C. Dickins (F/O., R.A.F.), to Victory, for R.A.F. Base, Gosport (July 5).

Promotions

Lieuts. (F/O., R.A.F.).—L. G. Richardson, J. H. Allison, and E. C. Coats, to rank of Lieut.-Commr. (seny., June 30).

Lieuts. (Flt. Lieuts., R.A.F.).—A. M. Pilling and J. S. Linsey, to rank of Lieut.-Commr. (seny., June 30).

ROYAL AIR FORCE

FLIGHT LIEUT.-F. W. Foster, D.F.C., D.S.M., to Courageous (June 30).

0 0 0 0 2

Civil Aircraft as Bombers

The British representatives at the Air Committee of the Disarmament Conference have made the following proposals:

1. That the construction of civil aircraft with a view to their eventual use for war purposes shall not be permitted.

2. That constructional features shall not be permitted in

design intended to facilitate the installation of military fixtures or fittings.

3. That any civil aircraft infringing the above prohibitions shall not be licensed or permitted to fly.

4. Civil aviation personnel shall not be trained in military duties.

5. The high contracting parties shall agree not to establish or subsidise civil air lines intended for use for military purposes.

Mr. Handley Page's Views

Ar the annual general meeting of Handley Page, Ltd., on June 30, Mr. F. Handley Page remarked that their 42-seater civil aircraft with a top speed of 135 m.p.h. could readily be transformed to carry 4 tons of bombs with a range of 300 miles, or with a longer range if a smaller load were carried. He said that proposals to prevent this by international agreement could not achieve any more success than the proposals to create an international air force. He also said that while Imperial Airways received a substantial subsidy to cover the deficit which would otherwise result from its operations, the cost of developing new aircraft for Imperial Airways' needs had to be borne entirely by the manufacturing company. Our Two-seater Fighter

It has been decided to call the fighter version of the "Hart" by the name of the "Demon." It is doubtless an appropriate name, but we are puzzled as to the rule of nomenclature to which it conforms. We thought all

new fighters were to have the initial F (e.g., "Fury"), Army co-operation machines the initial A (e.g., "Audax"), Army co-operation machines the initial A (e.g., "Audax"), general purpose machines G (e.g., "Gordon"). What can the D of "Demon" stand for? Surely it does not imply the foreign term "Double-decker"? The "Demon," it will be remembered, is used by No. 23 (Fighter) Squadron at Kenley.

Flights Abroad by British Pilots
AIR MINISTRY Notice to Airmen Series A, No. 27, of 1932, draws notice to the fact that aircraft entering Germany must carry a third party insurance. The cover required for injury to several persons is a capital sum not exceeding 75,000 gold mks., or a pension not exceeding 4,500 gold mks., while the maximum cover for damage to objects is 5,000 gold mks.

Kite Balloons at Cardington

According to Air Ministry Notice to Airmen Series A, No. 29, of 1932, kite balloons will, until further notice, be flown from the Bedford (Cardington) Airship Station up to an altitude of 15,000 ft. Aircraft are therefore warned to avoid flying within four miles of the airship station.

Night Flying of R.A.F. Aircraft

AIR MINISTRY Notice to Airmen (Series A), No. 41 of 1932, is a notification that R.A.F. aircraft will be flying without exhibiting navigation lights unless other aircraft are observed in the vicinity in each of two areas, firstly, that bounded by straight lines joining Sunbury, Swanley Junction, Sevenoaks, Redhill and Leatherhead, daily from August 1-13, between 21.45 hr. and 00.30 hr., above 2,000 ft., except over that portion lying between a straight line joining Croydon, Deal and the Belgian coast and between Croydon, Dungeness and the French coast. The second area is that bounded by straight lines joining Reading, Winchester, Salisbury, Swindon and Reading, above 2,000 ft., between July 18-22, from sunset to sunrise.

THE KING'S CUP RACE

(Concluded from page 658)

promised to be about 3,000 feet, and bright patches of blue sky were visible. The wind was also in the right quarter for us—south-west—and also only about two miles per hour. However, it did veer round to west during the morning, and also freshened up slightly. Visibility was also good—about four miles—and this improved slightly during the morning. Luckily, we were not hampered by any rain.

Everything was ready on the aerodrome by 11.30, and it looked as if all the arrangements would be very satisfactory. We were expecting the first machine about 12.45 hours, but realised by the wireless report from Bristol that it would probably be W. L. Hope and that he would very

likely arrive earlier.

Just at 12.30 hours we heard the sound of a machine approaching from the north-west, and soon we realised that Hope was beating his handicap easily. He landed, refuelled, had lunch, and was ready to go to the starting line before the next machine was heard, about 12.55 hours. This was soon recognised to be Winnie Spooner, and as she crossed the finishing line and her machine was recognized as the start of t nised, a hearty cheer went up. She is very popular with all the Leicester people. The next arrivals were G-ABVW, G-AAHP, G-ABLG, G-AAVA, G-ABDN, G-AAJP, G-ABTR, and G-ABWI. These all came in at very short intervals. By the time the left of these machinery short. intervals. By the time the last of these machines arrived Hope was well on his way and Miss Spooner was ready to start.

At this time all kinds of theories were going round as to who would be the winner. Hope seemed favourite, but it was thought that Runciman in his "Puss Moth" might catch him up. Winnie Spooner, we realised, had very little chance of gaining any more on her handicap, but she had set off again with the good wishes of the Leicestershire Club members; she was their entrant for the

Siddeley Trophy

Gradually all the machines came in, and no untoward incidents happened. Fielden was rapidly gaining places and allowing for the 40-minute break it looked as if he would soon reach one of the first few positions. It seemed a terribly long time waiting for the Avro "Mailplane," but when it did arrive I think all were amazed at its speed, although even with that we could not see how it could gain a leading position. It could only win the prize for the fastest speed for the fastest speed.

There was only one retirement at Leicester, No. 1. J. F. Legard has his oil tank filled with petrol, and it was impossible to have the machine ready in time. No spares

of any kind were needed by any of the entrants.

I would now like to mention a few points about the Leicester Control. It was organised by the Leicestershire Aero Club, and the whole success of the arrangements was due to the chairman of the sub-committee in charge. Capt. C. E. Lynche-Blosse, who is the Chief Constable of Leicester. He himself was remarkably keen, and this sufficed to make his helpers the same. Ratcliffe is an island aerodrome, and all the Control was worked from the centre. Each machine had either one or two stewards appointed to it, and they wore the racing number of the machine in black or white on a chest apron. Each machine also had its own pit, grouped by the petrol companies, and

also had its own pit, grouped by the petrol companies, and arranged with the racing number shown clearly on each pit. Plentiful supplies of petrol and oil were stored in each pit. The petrol and oil companies supported the Club well by arranging for a man to refuel each machine. As the machine crossed the finishing line, the stewards came forward and were there to meet it as soon as it landed. They took it to its pit and then took the pilot to the Control tent and then to lunch. The steward had to keep in touch with the pilot all the time he was on the ground and saw him started towards the check post. Everything worked easily all the time, and there was no delay at all, every pilot having plenty of time. After seeing how these arrangements worked, I cannot help but seeing how these arrangements worked, I cannot help but feel that it is the only way to run a control, and hope that in future all controls will be arranged on similar lines.

King's Cup Random Items

Hope's winning "Fox Moth" was doped with Titanine; his "Gipsy IIIA" engine ran on National Benzole, fired by K.L.G. plugs and B.T.H. magnetos. Hoffman bearings ensured low-friction running, and the Fairey metal air-screw made sure of good propeller efficiency. The naviga-

tional equipment included, of course, Smith's instruments, and the number of flying hours were recorded on an Air Log. (It did not have to record many!)

Out of the eight competitors which fell out of the race for any reason whatever, only one suffered actual engine breakdown. One engine in 42 starters is a pretty good proportion. We wonder if any other country can show a similar reliability?

K.L.G. plugs were used on first, second and third machines in the King's Cup Race, on the winner of Siddeley Trophy, and on the machine which made the fastest time over the course.

Of the 42 starters on the first day, 27 were fitted with Fairey metal airscrews. Of the 27, 25 finished the course.

Fifty per cent. of the competitors were using "Shell" spirit and/or oil. Mr. Brown, who made the fastest time, was using "Shell" spirit and oil. Flt. Lt. Fielden and Mr. Runciman used "Shell" spirit in getting second and third places respectively. Mr. Runciman, winner of Siddeley Trophy, used "Shell" spirit and oil.

Of the first 12 machines home, 10 had de Havilland Gipsy " engines.

For the eleventh time in succession the King's Cup Race was won on K.L.G. plugs.

Owing to the failure of Stack to return to England in time for the race, the Blackburn B.2 Trainer, No. 9, was flown by Mr. P. E. G. Sayer.

Avro "Tutors" for the R.A.F.

A. V. Roe & Co. are to be congratulated upon having had their "Tutor" (Avro type 621) with Armstrong-Siddeley "Lynx" engine officially accepted as the new standard training machine for the British Air Force. Avro 504, which in turn was developed from the Avro biplane of 1913 or so, became the standard training type in 1917 and has survived, with minor modifications, until the present time. There is a certain amount of poetic justice in the fact that a firm which has been associated with training types for so long should have their latest type accepted when the time came for the 504 to be cype accepted when the time came for the 504 to be replaced, although this probably carried no weight whatever when the final selection was made purely on the merits of the machine. The Manchester works look like being busy for a long time to come, and our old friend Dobson should have enough work to keep him out of mischief for the next few months.

NEW COMPANY REGISTERED

GRAVESEND AVIATION. LTD. Capital £100 in 1s. shares. Proprietors of aerodromes, hangars, garages, aeroplanes, airships, seaplanes, aeronautical and general engineers, etc. First directors:—T. A. B. Ternan, 30, Newgate Street, E.C.1, company director; W. A. C. Kingham, 35, Hampden Avenue, Beckenham, aviator (permanent managing directors). Secretary:—T. A. B. Ternan. Solicitors:—Wingfields, Halse & Trustram, 51, Cheapside, E.C.2.

PUBLICATIONS RECEIVED

Murder in Full Flight. By Marcus Magill. London: Hutchinson and Co., Ltd. Price 7s. 6d.

Report on the Progress of Civil Aviation, 1931. Air Ministry—Directorate of Civil Aviation. London: H.M. Stationery Office, W.C.2. Price 5s. net.

4

AERONAUTICAL PATENT SPECIFICATIONS Abbreviations: Cyl. = cylinder; i.e. = internal combustion; m. = motors.

(The numbers in brackets are those under which the Specification will be printed and abridged, etc.).

APPLIED FOR IN 1931

Published July 14, 1932

7,700. F. A. THAHELD. Radial-cyl. i.-c. engines. (374,875).
7,924. V. A. ALMONACID. Propelling systems for aircraft. (374,926.)
8,027. RHEINISCHE METALLWAAREN- UND MASCHINENFABRIK, H. ROMBERG and C. Otto. Aiming device for anti-aircraft guns. (374,930.)
21,027. F. WHITTLE and J. H. M. REYNOLDS. Supercharging of aircraft engines. (375,104.)
23,248. J. ESCHNER. Parachutes. (375,126.)
24,571. Sudditional Eremsen-Art-Ges. Fuel injection arrangements in Diesel engines. (375,136.)
29,472. Soc. Anon. Des Atellers D'Aviation L. Breguet. Aeroplane wings. (375,175.)
34,824. H. C. A. POTEZ. Rear landing-gear for flying machines. (375,296.)
35,824. W. G. Gold and W. Bayllss, Ltd. Aircraft. (375,219.)